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HOME BASEMENT SHARING: AN ANALYSIS AND A POSSIBLE APPROACH TO PLANNING

BY

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HOME BASEMENT SHARING:

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Jiri Nehnevajsa

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<p>Home basement sharing is one of the ways by which whatever shelter deficits might be partially overcome. This study considers the extent to which home basement sharing might be feasible, and the degree to which a program of this kind would contribute to the protection of our people against nuclear hazards. Tentative approaches to home basement sharing planning are developed on the premise that the</p>		

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29. population might be protected 'in-place' or upon 'relocation,' and that basement sharing plans might be developed under 'normalcy conditions' or under 'crisis conditions.' The study arrives at programmatic recommendations as to how such planning could be accomplished should the nation choose to consider the incorporation of private basements into the national shelter system on a voluntary basis.

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PART ONE

I. INTRODUCTION

This study concerns the possibility of using (private) home basements as (fallout) shelters for Americans other than only the residents of each particular housing unit. It "concerns" this possibility in two major ways. For one, whether home basement sharing seems feasible. Secondly, how it might be accomplished.

"Feasibility", in turn, has to do with factors which bear on public acceptance, or minimal tolerance, of such a program. It also has to do with the assessment of overall effects on sheltering capabilities should a home basement sharing program become policy.

"How" an effort of this kind might be accomplished pertains to major factors likely to enhance, or degrade the program. A detailed plan is, at this time, not called for. Thus our objective is to identify the key parameters the consideration of which would be essential in deriving more concrete plans, determining their probable success, and carrying them out, upon requisite planning iterations, should home basement sharing be actually adopted by the Defense Civil Preparedness Agency as one of its future programs. To come to grips with the problem, two major world situations (in effect, simplified scenaria) must be considered.

One of these delineates a state of affairs of relative normalcy. The circumstances of the Fall of 1975 roughly correspond to this type of a situation. The level of international tensions is relatively low although there is a good deal of argument possible as to how low, or high, it may actually be. American Armed Forces are not engaged in combat anywhere, with the consequence that probabilities of a conflict already underway escalating are zero. There is in no sense an acute threat of the Berlin Wall or Cuban missile crisis variety. Few would thus consider the current state of affairs as one in which the risks of thermonuclear war in the very near future are high. At the same time, but a few people would view the world as one void of risks of nuclear confrontation between the superpowers.

The second situation on which we need to focus is one of threat. It is characterized, of necessity, by visible and relatively drastic shifts in the international comportment of today, and the shifts are such as to support an interpretation of intensified danger of nuclear war. It is not our purpose to specify the change-states of the world environment in which this shift from normalcy to threat (of an acute, rather than chronic, type) would be experienced by the nation's leaders and by the public (simultaneously or near-simultaneously, or else, sequentially). But some forms of conflict in the Middle East with escalating both Soviet and American involvements could be easily broadened into scenarios in which the odds of a thermonuclear war have suddenly, and sharply, increased. Some forms of Soviet-Chinese confrontations could involve American entanglements of a highly threatening kind. Other acute crisis scenarios might be described, though perhaps not too many of them--and certainly fewer than might have been the case in the decade of the 1950's or in the 1960's.

Be it as it may, we view the second environment, that of (acute) threat as one distinctly different precisely by the recognition that the risks of the thermonuclear war have rapidly and sharply risen, and that the probabilities are likely to further increase, perhaps beyond the point of no return, unless the "crisis" is resolved and semblance of normalcy restored.

Furthermore, an acute crisis situation does not last indefinitely without major alterations in the overall state of the system. Thus, in terms of our assumption of two distinct and separable world situations, a crisis abates in relatively short order (usually within two weeks or thereabouts) or climaxes in a cataclysm of international violence.

The questions as to the feasibility of home basement sharing programs and as to the "how-to-do-it" dimension than may have somewhat different answers depending on the state of the world in which the sharing programs would be carried out.

One set of problems concerns bringing about home basement sharing, as a plan, under normalcy situations and thus as a normalcy

readiness state on the premise that trouble may lie ahead and that we need to do what we can now to be prepared for it as best as possible.

Another set of problems has to do with efforts to render home basement sharing operational in, and during, a crisis situation, that is, under threat. Apart from factors which affect feasibility in the sense of public response, the time available for program implementation establishes distinctly different constraints, and some facilitators, depending on the respective (crudely differentiated) world situations.

Under conditions of normalcy, plans how to carry out home basement sharing planning occur in an ex ante manner, somewhat unconstrained by time, though highly constrained by resources (human and fiscal). Hence, the lead-time from concept to an operational system is a longer one, even a long one, and choice among alternative ways of getting from the state of affairs of today to one of tomorrow, in which home basements would have become part of the national resources to cope with nuclear war hazards, can be grounded in criteria of cost-effectiveness, and every effort can be launched to optimize, if not maximize, such criteria.

Under conditions of threat, planning for home basement sharing would have to take place as rapidly as possible, and could certainly not take more time than a reasonable time-trajectory of the crisis would indicate--if the program were to have any kind of salutary impact on the nation's readiness to face the "bad" alternative way in which the crisis would come to its climax.

To create plans how to go about planning the incorporation of home basements into a national shelter system, and then to do the planning itself so that an operating system results is not in keeping with the most probable futures of any acute threat environment. It follows, therefore, that plans as to how, if at all, home basements might be made most serviceable to most Americans as shelters must be generated under normalcy conditions anyway even if they were to be carried out only under the direst of all needs.

Hence there are two fundamentally different types of planning assumptions involved:

- A. Plans how to go about incorporating home basements into the national shelter system are produced now

(normalcy conditions) or upon adoption of the program by the Congress, the Administration (still under postulated normalcy conditions) and the actual home basement sharing planning (the implementation of plans as to how to go about it) occurs thereafter (under normalcy conditions as well).

- B. Plans how to go about incorporating home basements into a shelter system are produced now (normalcy conditions) or upon their adoption (still normalcy conditions) but with the explicit purpose of implementing such plans, and thus creating the actual operating system, only under conditions of acute threat. Thus the carrying out of the "how-to-do-it" plans, the actual field planning of home basement sharing, is delayed until there is a crisis, and it never need take place (in the absence of an acute crisis over an indefinite time horizon).

We shall refer to the former (A-type) plans as being Normalcy Oriented Plans (NOP), and to the latter, as being Crisis Oriented Plans (COP).

If only because of the time constraint (comparing normalcy time flows and crisis time flows), the character of NOP's will not be the same as that of COP's.

Since it is impossible, as well as imprudent, to judge whether the nation's wisdom will dictate the implementation of plans under normalcy or only in the event of manifest crisis-related need, it follows that two types of plans are required in so far as different outcomes are themselves, as they are, contingent on the world situation in which the plans are activated.

- * How would we go about including home basement sharing, for sheltering purposes, into the national preparedness system now, or under situations not too dissimilar in the "nowness" in terms of thermonuclear war hazards?
- * How would we go about including home basement sharing into the national preparedness system if the task is to be accomplished in, and during, an acute crisis only?

These are, of course, two central questions to be addressed by out study.

But the matter is more complicated than that. The shape of actual plans to incorporate home basements into a national preparedness posture is obviously dependent on the distribution of our people at the time when they would themselves use the results of the plans, that is, when our people would actually have to be sheltered.

If there are two distinguishable world environments for "how-to-do-it" conceptualizations, themselves abstractions of a variety of world situations of variable shadings between normalcy and threat, there are also two fundamentally distinct "postures" of our population.

One of these major modalities refers to a situation in which we assume that our people will be pretty much where they usually are. Hence, if they require sheltering of any kind, it will occur wherever they may be, or, better yet, wherever they can get to. This then circumscribes the notion of in-place sheltering.

Both NOP's and COP's can be predicated on in-place sheltering.

Another, and distinct, major modality postulates the possibility that it may be feasible, desirable and actionable to evacuate some, even many, of our people to locations which would be safer than those in which they usually reside and/or work.

It is not our objective to discuss the feasibility or desirability or actionability of such evacuations. Studies of this nature have been underway on behalf of, and by, DCPA and we need not summarize their implications here.

Rather, given the possibility of crisis relocation, itself calling for large scale "how-to-do-it" planning and itself having its normalcy and crisis plan-implementation (and activation) dimensions, we need to weigh the effects on home basement sharing plans of such plausible relocation(s). It is clearly reasonable to assume that crisis relocation is, as it must be, risk-related. People from higher risk areas would move to lower risk areas. Thus, by and large, the concepts of crisis relocation involve the possible movement of city, or SMSA, or otherwise city-related but risk-determined geographic area, dwellers into non-city, non-SMSA, less risky parts of the country.

Since evacuation plans themselves would obviously not be activated, if ever they were, except under extreme conditions of crisis (and perhaps even then only in response to the evacuation on the part of an adversary), it follows that time constraints of the crisis circumstances make it necessary to consider relocation only to relatively adjacent areas, and certainly not beyond some time/mileage distance which makes egress possible and which also make the handling of relocatees humanly and technically feasible.

Thus there is no presumption that somehow crisis relocation would amount to a dispersion of our population that could maximize sheltering, or that would maximize "comfort" of the relocatees and their hosts.

Rather, in those areas which can be designated as host settings for particular flows of relocatees from particular risk areas of the country, the nation would have to do with what is available, with what can be marshalled in short (crisis-related) time, and with what can be done with the location-specific relocatee/host people, buildings, and resource ratios. Thus there is a need to consider both NOP's and COP's on the premise that crisis relocation may occur.

But since relocation, even if planned for, may never take place either because of the (somewhat unexpected) suddenness of crisis climax or of the (also somewhat unexpected) suddenness of crisis resolution or because of the decision (by the President) not to activate relocation plans no matter what, NOP's and COP's must maintain in-place sheltering capabilities even if crisis relocation plans, feasible, desirable and actionable (these themselves being matters for determination by both research and policy decisions), were in existence for the whole country.

Thus, in effect, we have four, rather than two, major issues to consider:

- I. Normalcy Oriented Plans (NOP's) for home base-
ment sharing which involve in-place sheltering
(not significantly affected by spontaneous evacuation should a crisis occur).
- II. Normalcy Oriented Plans (NOP's) for home base-
ment sharing which are predicated on crisis
relocation.

III. Crisis Oriented Plans (COP's) for home basement sharing which revolve around in-place sheltering.

IV. Crisis Oriented Plans (COP's) for home basement sharing which assume crisis relocation.

Our study then, of course, concerns these four strategically different circumstances. We are, however, not assuming that a program of home basement sharing should be developed and implemented. We are also not voicing a policy preference for in-site versus crisis relocation (population) postures. Doubtlessly, we have views, both personal and those grounded in data, which may be tantamount to preferring some options over others. But this has not been the purpose, and not even the intent, of the subsequent discussions.

We do assume, on the other hand, that it is desirable to consider various options whereby our people may be better protected against possible hazards of nuclear war. One such option, of course, is represented by Americans sharing a safer resource (a basement with more PF, for instance) with other Americans. Another such option involves the relocation of Americans from higher to lower risk areas. The intersection of these two alternatives defines a situation in which safer resources are shared in safer areas. This, of course, would hold only in so far as home basement sharing were to represent a "good program" (feasible, desirable, and actionable) and crisis relocation were similarly a "good program" (in terms of similar criteria).

II. HOME BASEMENT SHELTER: CONTEXT

"The mind rebels against thinking about disaster. Disasters are never pleasant events--they can't always be averted--but with advance planning, their effects can be mitigated. Preparing for disaster is the major concern of the Defense Civil Preparedness Agency (DCPA).

The Congress thought about it nearly 25 years ago--to the extent that legislation was passed, called 'The Federal Civil Defense Act of 1950.' That is how modernday civil defense, now broadened to 'civil preparedness', came into being. Their concern at the time was the threat of large-scale aerial attacks on cities and industrial centers. That concern remains today, as it applies to the more powerful and more extensive effects which can be generated by nuclear weapons.

Much has been accomplished on the international scene, and work continues, to assure a peaceful world. But the possibility of attack on this country always exists, and disasters are a daily occurrence in peacetime. That is why DCPA guidance and support is provided to State and local governments to help them establish and improve their emergency operations capabilities.

What, if anything, does the consideration of home basement sharing for the purposes of providing shelter have to do with the mandate to develop programs to "protect life and property in the event of a nuclear attack on the United States"--the key wording of the 1950 Congressional (Federal Civil Defense) Act?

For our immediate purposes, it is not important to subject the civil defense (now, preparedness) history to careful scrutiny. Yet, a

few major points do highlight the drift of the past quarter of a century, and they are relevant in establishing the context of concern with the possibility of including home basements as shelters for Americans should the need arise.

With limited nuclear capabilities (in terms of megatonnage) and with relatively (hours) long tactical warning time of the early 1950's, evacuation of our cities seemed like a desirable strategy. And it was, to be sure, relatively feasible for by far most American cities of the time within the time constraints imposed by the probable warning time. The limited nuclear capabilities of the adversary of the period, the Soviet Union, would not have led to the conclusion that secondary weapons effects (fallout in particular) might lead to casualties as high, if not higher, as would the direct attack itself. Given the warning time and given the most probable outcomes of an attack of the early 1950's, OCDM (as parent of OCD which, in turn, sired DCPA) would have been reasonably satisfied to move Americans from areas thought unsafe to areas considered safer, if not altogether safe.

The rapid development of nuclear weapons in the megatonnage range by the Soviet Union (first H-tests in 1954) coupled with strategic decision to move in the direction of guided missile systems (to become a large arsenal of ICBM's and IRBM's) modified the national climate of defensive thinking by the middle of the 1950's.

Faster delivery capabilities of more megatonnage (by factors of 1,000 or more) that became deliverable dictated changes in national civil defense thinking (as the circumstances dictated changes in overall defense and political thinking of the time--a point we shall not belabor since it is tangential here). Emphasis was placed on the possibility that American families may want to provide themselves with the protection that might be required; hence, the family fallout shelter program was launched.

It is not unimportant to emphasize that a great deal of research preceded, as it had to, the initiation of the program--much of it centering on the structural characteristics of desirable shelters (against fallout). Thus the researchers anticipated the need for answers well before the answers were needed, or before anyone was sure what questions to even ask that might need answering.

In fact, only very few American families decided to, and did, build "fallout shelters" or rebuilt their basements and playrooms in keeping with the OCDM recommendations of the time.

Whether it was a "bad" program or not (thus, perhaps feasible and even desirable but not actionable) is a moot point in the middle of the 1970's. But studies of the period suggest that much more in the way of action on the part of Americans might have been expected, and might have come about, had major national encouragement been given. For one, by a reasonably clear statement of the President (Eisenhower); secondly, by Congressional action which would have allowed the cost of shelter construction to be defrayed either by the Federal Government directly, or, at least, deductible as legitimate expense on federal income tax reports.

The data do support the conclusion that many more Americans, even substantial numbers indeed, may have gone into the "shelter construction" or "basement upgrading" business had Congress, in its wisdom, sought fit to provide the moral and fiscal encouragement. At the same time, OCDM commissioned several studies to consider factors associated with the construction of (new) fallout shelters for the public. Research was undertaken to determine the costs, psychological and sociological as well as all logistic factors, of "newly built" (fallout) shelters for groups of Americans as small as 100 and as large as 1,000, and, perhaps, even larger ones.

Technically and economically, it was obviously feasible to build such new shelters. Most psychological and sociological problems seemed manageable, and many appeared to be rather trivial (e.g. "when shall a shelter 'door' be closed"). Logistic problems of equipment, food and medical supplies did not loom insurmountable--in terms of the key research results.

The program of construction of public (mass) fallout shelters, of course, never did get underway. It was never seriously proposed, in that form, by OCDM and it did not seem that it would have led to the required Department of Defense, Executive Office, and, above all, Congressional approval even had OCDM gone all out to gain its acceptance. It was, to be sure, expensive as a proposition to begin with.

It was feasible. It was, possibly, desirable. It proved not to be actionable.

By the time, of course, the research findings regarding newly built mass fallout shelters were percolating throughout the defense community, the criteria in terms of which such construction might proceed had changed. Without going into a great deal of detail, suffice it to say that weapons effects research by AEC and war gaming experiments, in their incipient phases, indicated that the protection factor criteria may have been far too excessive.

Remember that the family fallout shelter plans were predicated on the need for PF 1,000, and PF of less than that only by default and not by design. Remember that the studies of mass fallout shelters, too, assumed the need for PF of about 1,000 (and more).

By the end of the 1950's, standards of PF of 100 or more seemed reasonable for most parts of the country and for most survivors of probable primary weapons effects. Again: research on weapons effects and fallout patterns suggested that the early standards of protection may have been too conservative, and that the lowering of the desirable criterion from 1,000 PF to 100 PF--and later on, to 40 PF--would not significantly alter the odds of survival.

This has, of course, never meant that PF of 1,000, when available or acquirable, would not be preferred over lower standards. Nor, in the other extreme, has it meant that any PF (even a PF of 2 which most houses can provide as they are) would not be better than no protection whatsoever.

But the implications were, indeed, that shelter planning--which, after all, must apply some criterion--could be based on protection levels much lower than had been originally estimated, and that survival prospects under postulated (and gamed) attack conditions and attack magnitudes would not be reduced except, perhaps, marginally.

The relative lack of success of the family shelter construction program, the absence of a mandate, and attendant funds, to initiate the construction of public fallout shelters, and the possibility of lowering protection factor standards made it plausible to raise the question as to how much public sheltering might be achievable if existing buildings were used.

The Surveying, Marking and Stocking program arose out of such considerations, and obtained Congressional approval (as well as appropriations) in part because of the manifest need for, and promise of, such a program and, perhaps even in greater part, as an aftermath of the Berlin Wall crisis. The effort to identify "best available shelter" for as many Americans as possible, to enter into agreements with building owners so that the shelter could be licensed, to mark the respective areas as shelter (of given capacity, in turn predicated on 10 square feet per person of ventilated space, or 500 cubic feet of unventilated space--with airflow of 3 cubic feet per minute as the cutting edge between the two concepts) has continued to-date.

As of June 30, 1974, there were 228,473 identified facilities (each sheltering 50 or more persons) with some 226,706,000 shelter spaces. Some 130,376 were licensed (139,123,000 spaces), and 118,549 (with 118,875,000 spaces) marked as shelter.

The protection provided by other facilities than buildings, such as subways, mines, caves and tunnels augmented the shelter inventory (and such facilities and spaces are included in the data cited previously). In 1974, the National Shelter Survey (carried out in 58 metropolitan areas in 36 States in fiscal 1974) incorporated concerns with protection in buildings and other facilities against primary (direct) weapons effects as well as against most probable major natural disasters.

Furthermore, efforts at "shelter development" mark the period of the 1960's and thereafter. The program's aim "is to encourage and aid architects and consulting engineers to include shelter from both natural and manmade hazards in the design of new buildings."¹

Over the years, more than 25,000 architects and engineers underwent at least minimal training to become qualified Fallout Shelter Analysts, thus enabling them to consider the incorporation of shelter into their designs, and to provide building owners (and builders) with the requisite assistance.

The identification of available sheltering, or changes in shelter spaces due to shelter development in new construction, does not, however, in itself lead to a system of shelter utilization.

Begun in the mid-1960's, a program of Community Shelter Planning was to provide the necessary integration between locations and movements

of people and the locations and numbers of sheltering facilities.

By the end of fiscal year 1974, 2,893 such community shelter plans were either completed or in process (of the total of 3,161 essentially county-type designated national areas), and the resulting "Emergency Information Readiness" packages were distributed in 1,844 of the areas, with a population of about 103.5 million.²

But significant proportions of (public) shelter spaces are located within the nation's most urban areas. At least with respect to the threat of nuclear war, these are, almost by definition if with some plausible exceptions, higher risk areas both in terms of direct weapons effects and with regard to fallout levels. Thus many shelter spaces are in places which are less safe, and the obvious consequence is that the movement of people from outlying areas (with fewer shelters) into urban centers (with many shelters) has never appeared to be a promising approach.

In an early assessment of at least one major metropolitan area (Detroit), Harvey and Hubenette have underscored the point:

"In general, public shelter tends to be concentrated in urban areas and, in outlying areas, is not sufficient to shelter even local residents. As was indicated in an earlier study, the only major shelter resource permitting a significant outward shift of urban populations is the home basement resource."³

If then there exists a deficit of public shelter spaces, as it does, and if the available shelter facilities are distributed, in some significant measure, in a manner which is counterproductive under sensible survivability criteria, what, in fact, can the "only major shelter resource," the home basement, contribute to the nation's readiness?

In fact, home basements are not necessarily the "only" remaining shelter resource. Since the days of the Harvey and Hubenette Stanford Research Institute study, it has become clear that many additional shelter spaces are also possible by crisis-implemented upgrading procedures of facilities which, on upgrading, have high sheltering potential.

Furthermore, Kerney's work at Oak Ridge has also led to the conclusion that the construction of expedient shelters may be possible

in very limited periods of time and with relatively modest manpower investments.

Be it as it may, home basements are an important resource, and though they need not be either the "only" or "last" resource not yet tapped, it is prudent to consider the extent to which home basements could provide additional sheltering should the need arise.

III. HOME BASEMENT SHARING: CONTEXT

Once advances in weapons effects studies, and analyses of likely fallout patterns, led to the conclusion that lower than initially envisaged standards for protection would be tolerable (with 40 PF and over becoming the new "cutting edge" in the early 1960's), it seemed also clear that the inventory of public shelter spaces could be augmented by an inventory of this additional major remaining resource--private home basements, of possible spaces resulting from up-grading and of the as-needed construction of expedient shelters. If an effort to assess the sheltering potential of extant home basements seems technically sound, dictated, as it were, by a national choice not to construct new family shelters, not to build new (mass) public shelters, and by the distribution of deficits of available shelters in existing public buildings, it was also sociologically a reasonable decision. Regardless of the civil defense configuration, many Americans have preferred "private" to "public" shelter facilities. In times of crisis, of course, the chances are that people would use whatever shelter were handy and if only public shelters were designated, by far most of those with private shelter preferences would avail themselves of public spaces at odds with their preference.

Yet, if an option for private shelters with acceptable protection were provided, quite a few citizens might choose it. And since, indeed, a good many people tend to have a preference for private shelters, the assessment of home basements for possible protection has the effect of expanding the domain of choices for individual Americans and their families.

In our 1964 national survey, respondents who were not opposed to all types of fallout shelters (1,423 of 1,464 respondents) were also asked about the kind of shelter they had in mind. Some 11.0 per cent preferred "family" shelters, 30.7 per cent cited community sheltering, and the remaining respondents, 58.3 per cent, mentioned "both"--that is, a mix of public and private shelters.⁴

Table 1

PREFERENCES FOR COMMUNITY OR PRIVATE SHELTERS

<u>Study</u>	<u>Question</u>	<u>Community Shelter</u>	<u>Private Shelter</u>	<u>Number of Respondents</u>
University of Michigan, 1961	When you think about having a satisfactory shelter that is at least worth going to, what kind of a place do you think of?	50.0	30.0	1,474
AIPO, November, 1961	Should more emphasis be placed on building home fallout shelters or more emphasis on building community fallout shelters?	58.0	21.8	2,741
Bureau of Applied Social Research January, 1963	In case of nuclear attack, would you rather be in your private shelter or in a community shelter?	39.0	38.0	1,379
University of Pittsburgh July, 1963	In case of nuclear attack, would you rather be in your private shelter or in a community shelter?	49.7	40.9	1,424

Robert Mast, Orientations Toward Community and Private Shelter Systems, University of Pittsburgh, August, 1967, Table 23, p. 36.

In the 1966 survey, the 1,471 sampled respondents were asked to assess the desirability of basement surveys:

"Suppose all private homes with basements would be surveyed as possible fallout shelters and the owners informed if their home qualifies as a shelter. How desirable would that be?"

Overall, 86 per cent of the interviewees thought this a desirable option (55.2 percent, if fact, associated the highest desirability scale value to such a program). At the same time, over 86 per cent of the respondents also favored public shelters, thus again suggesting the perceived need for efforts which provide a balanced approach to the possible programs for the protection of the nation's civilians.⁵

The 1972 survey revealed that 66.7 per cent of the 1,302 respondents in the nation-wide study favored home basement surveys⁶ and asked how the shelter deficit might be best bridged, 27.2 per cent mentioned the use of private basements as their first preference, and 42.9 per cent as their second preference (including uses by home owners only as well as basement sharing).⁷

Thus the national sample survey of home basements carried out for the Office of Civil Defense (as the Defense Civil Preparedness Agency was then called) in 1965 did not produce surprising results in the response rates. Of about 22,000 questionnaires which were mailed out, 25 per cent responded within three weeks, and two additional follow-ups (the last one involving a "registered letter enclosing another copy of the questionnaire, and a limited amount of telephone solicitation" led to an overall response on the part of 85 per cent.

Our 1966 survey would have predicted a response of about 86 per cent.⁸

A pilot test of 1964, which led to returns of only 20 per cent of the 97,000 or so distributed questionnaires (in Pennsylvania, Minnesota, Mississippi and Florida) thus did not seem representative, and the method of distribution of the survey instruments seems to have accounted for the sharp difference: the pilot study involved distribution by Boy Scouts, civic groups and the like and no follow-ups of any kind.

That the 1965 results were, in fact, more characteristic of the nation's mood became clear when state-by-state surveys, eventually completed in 26 states (excluding the basement-poor Southern and Southwestern tier of states), is clear when it is realized that returns averaged 74 per cent and that they rarely fell, in any of the states, below 70 per cent.⁹

Such returns were, indeed, predicted on the basis of the University of Pittsburgh national surveys.¹⁰

On the basis of the Home Basement Surveys, the Office of Civil Defense estimated that of the 22,453,000 single family dwellings with basements (themselves constituting some 53 per cent of all such dwellings according to the 1960 Bureau of Census data), some 10 per cent provided a protection factor of 40 or higher; and some 75.9 per cent of the basements (17,041,827) had an estimated PF of 20 or better.¹¹

With a little over 3 persons in an average household, some 52 million people could be sheltered at PF ≥ 20 , and about 7 million of them in basements with PF ≥ 40 .

A more detailed analysis in Ohio suggested that the average basement area was about 1,038 square feet (roughly, 27' by 38'), and thus 1,000 square feet seems to be a good approximation to the average nationwide.¹²

If peacetime disaster standards are considered, allowing about 40 square feet per person in need of sheltering (as in the aftermath of natural disasters, some 25 people could be provided for in an "average" basement.

If standards of fallout sheltering, on which Community Shelter Plans have been predicated, are employed--with 10 square feet per person for the acute need period--the typical basement might accommodate as many as 100 people.

The private basement resource is thus a large one provided such facilities could be used to shelter others rather than merely the dwelling residents. The resource is also not negligible even if only the home residents, knowing that their basement is suitable as shelter (or knowing conditions under which it could be made suitable, or more suitable), were to use it.

The national deficit of public shelter spaces along with their inequitable distribution, coupled with preferences of many Americans, perhaps one in three, for private rather than public shelter, make the basement a potentially valuable resource. It is such considerations that led to the national surveys on an experimental basis, and to state-by-state surveys in parts of the country more with a view toward the operating civil defense system.

Since the average basement is much larger than would be "needed" to accommodate members of one household only, the next obvious question has arisen: could this limited and valuable resource be shared?

Before this question can be addressed, some of the major strategic changes which affect the answer may have to be taken into account. These considerations, too, bear on the context in which home basement sharing may be considered.

Strategic evacuation thinking of the 1950's was largely based on the known capability to detect probable enemy attack, and the time scenario associated with that attack. In the day of manned bombers, and of "tactical" warning extending over many hours, it seemed, of course, plausible that some of the nation's cities might be evacuated.

They were, to be sure, evacuable though not without exception: the Northeastern corridor and the California Southwest have always presented special, though not insurmountable, problems. The age of ICBM's and IREM's had, by and large, made the evacuation strategy implausible even if detection (and therefore, warning) methods improved greatly as they did in light of the introduction of 425 L (SAGE) system into NORAD's armamentarium.

Until relatively recently, thinking about strategic evacuation (of potential risk areas) was precisely what it was: mainly thinking.

Recently, as of some few years ago, major changes in this regard have taken place. Technologically, some of the space satellites may provide warning in the form of the kinds of activity reports which would reflect heightened effort on the part of any antagonist in a pre-attack period. Politically, it has come to be reasonably clear that an attack "out of the blue" could not be launched and that "warning" of sorts would be available days, if not weeks, ahead of time.

Now, if warning of a plausible attack were available days prior to the onset of hostilities--which themselves might be, one hopes, averted in the course of the period--then "evacuation" of risk-prone areas might, once again, become possible.

The feeling was, indeed, reinforced by the existence, and publication, of Soviet (city) evacuation plans. Therefore, it seemed both sensible and worthwhile to consider the possibility of evacuating some (or all) densely populated areas, roughly reflecting the risk probabilities associated with imaginable attacks on the country.

The Crisis Relocation Program was born out of such considerations. There exists no commitment, as of now, to crisis relocation or even to crisis relocation planning. But feasibility studies, without doubt a desirable turn of events, have begun to be undertaken so that the results may themselves affect the nation's options: whether or not crisis relocation planning should, in fact, be undertaken, how fast, where, at what costs and with what implications.

The decisions in these regards cannot be made now; they may be postponed or shelved for a long time to come; they may be made in the near future, in favor of such planning effort or against it.

But since a program of feasibility assessment has been underway, it becomes clear that the home basement resource is affected thereby: how many, and where, basements are there outside of the nation's cities which are the prime candidates for evacuation or relocation thinking? How about home basement sharing, which thus must involve not only the inclusion of neighbors and other community residents, but of potential "evacuees" or "relocatees" from a nearby city?

Even if relocation planning were mandated, it does not follow that relocation would occur. In other words, a Presidential decision to evacuate our cities (some, or all) seems so complex and, in some sense, so implausible as to make one wonder about relocation planning itself. But evacuation is another option. It is plausible, if improbable.

The overall consequence is one which simply implies that we must have some kind of posture to protect our people both should there be no relocation decision, and should there be one.

The possible "solutions" regarding home basement sharing thus have to be played against two very distinct sets of world environments as well as against the basic modalities of distribution of our people in the event of a crisis.

A final word on relocation as it bears upon this research: while a nationwide evacuation might never be mandated either because of Presidential decision or because, as we hope, the international situation would not even require it, natural disasters lead to evacuation of whole cities or of whole areas of our cities.

The planning "exercise", therefore, need not be viewed as bearing on nuclear hazards only, but one which may enhance the nation's capacity to deal with a variety of more probable risks.

In any event, the possibilities of home basement sharing have to be addressed both as if the people were to remain where they are and as if they were to be encouraged to move to places safer from the hazard which is threatening them.

IV. HOME BASEMENT SHARING: RESOURCE

Some 54.2 percent of the nation's housing units, as of 1970, have basements. Not surprisingly, major regional and state-by-state variations exist in this regard. Almost 93 per cent of Massachusetts housing involves a basement, while only 3.0 per cent of Louisiana dwellings are so equipped. Table 2 and Civil Defense region Tables 2 I through 2 VIII detail the information on the basis of the 1970 Census of housing characteristics.

Like public shelter, the basement resource is quite unevenly distributed across the country. The South and parts of the West have few basements; the Northeastern and North Central tiers of states have many. If we assume that the more vulnerable SMSA's of the country might be relocated so that non-SMSA areas would become hosts of the relocatees, data from Table 2 (and 2.I through 2.VIII) reveal that the percentages of housing units with basements are generally somewhat lower outside of the SMSA's than they are within the highly urbanized areas.

In Civil Defense Region V (Arkansas, Louisiana, New Mexico, Oklahoma and Texas), there are actually more basements outside of the SMSA's (5.9 per cent as contrasted with 5.1 per cent)--or, at least, this is so in New Mexico, Oklahoma and Texas (Table 2.V). But the resource is quite scarce either in terms of in-place sheltering possibility or in terms of relocations.

The assumption that relocation might encompass all SMSA's and each SMSA as a whole is, of course, conservative. We have not gone through the arithmetic of relocation alternatives, but the task is obviously a straightforward one: if some cities, rather than whole SMSA's were relocated, there would be some increase in the basement resource; if only selected SMSA's rather than all were considered risk areas, and thus in need for relocation planning (and for actual

Table 2
NATIONAL AND REGIONAL PATTERNS: HOMES WITH BASEMENTS AND HOUSING UNITS
WITH BASEMENT OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basement	Per cent With Basement	All Year Units	With Basement	Per cent With Basement
U.S.	66,699,084	36,119,790	54.2	21,616,482	9,460,418	43.8
Region I	12,317,760	10,932,483	88.8	2,439,050	1,985,114	81.4
Region II	12,154,508	8,747,198	72.0	3,498,666	2,028,683	58.0
Region III	8,491,047	1,427,076	16.8	4,829,793	611,943	12.7
Region IV	10,885,809	8,400,091	84.0	3,320,784	2,333,168	70.2
Region V	6,888,267	352,403	5.1	2,775,320	164,571	5.9
Region VI	5,198,993	3,638,493	70.0	2,744,858	1,725,467	62.9
Region VII	8,254,564	1,461,073	17.7	827,762	119,884	14.5
Region VIII	2,508,136	1,160,973	46.3	1,180,249	491,588	41.6

"Regions" here are Civil Defense regions.

Puerto Rico and Virgin Islands excluded to Region I tabulation; Canal Zone not considered in Region III tabulation; American Samoa, Guam and Midway-Wake not included in Region VIII data.

In this Table, as in Tables 2I - 2IX the data are compiled from various respective tabulations in Housing Characteristics for States, Cities and Counties, Bureau of the Census, 1972, United States Summary volume and individual state volumes.

Table 2 I

REGION ONE: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA'S

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basement	Percent With Basement	All Year Units	With Basement	Per cent With Basement
Connecticut	968,815	881,224	91.0	166,051	147,790	89.0
Maine	339,440	280,264	82.6	266,635	210,768	79.0
Massachusetts	1,839,028	1,708,242	92.9	289,608	255,347	88.2
New Hampshire	248,799	213,815	85.9	183,778	153,545	83.5
New Jersey	2,305,293	1,915,056	83.1	528,001	367,319	69.6
New York	1,159,314	5,522,331	89.6	814,511	688,116	84.4
Rhode Island	307,309	283,784	92.3	40,704	34,462	84.7
Vermont	149,762	127,767	85.3	149,762	127,767	85.3
Region	12,317,760	10,932,483	88.8	2,439,050	1,985,114	81.4

Data on Puerto Rico and Virgin Islands omitted in the Region One Tabulation.

As in subsequent Tables, the percentage of homes with basements, state-wide, is based on the 1970 Census count of all year round housing units, whether occupied or vacant. The percentages parallel, of course, those appearing, for instance in Panel 21, DCPA Attack Environment Manual, CPG 2-1A6, June, 1973, DCPA, Chapter 6.

Table 2 II
REGION TWO: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basement	Per cent With Basement	All Year Units	With Basement	Per cent With Basement
Delaware	174,990	112,713	64.4	54,344	20,281	37.3
D.C.	278,390	233,146	83.7	-	-	-
Kentucky	1,060,689	440,674	41.5	639,246	179,970	28.2
Maryland	1,234,680	930,067	75.3	205,457	110,645	53.8
Ohio	3,447,860	2,621,202	76.0	784,626	544,689	69.4
Pennsylvania	3,880,102	3,466,494	89.3	815,903	700,467	85.8
Virginia	1,484,952	629,401	42.4	591,886	264,912	44.8
West Virginia	592,845	313,501	52.9	407,204	207,719	51.0
Region	12,154,508	8,747,198	72.0	3,498,666	2,028,683	58.0

Table 2 III

REGION THREE: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basement	Per cent With Basement	All Year Units	With Basement	Per cent With Basement
Alabama	114,845	160,677	14.4	532,845	52,216	9.8
Florida	2,490,838	82,237	3.3	803,173	22,029	2.7
Georgia	146,687	304,813	20.8	738,417	75,203	10.2
Mississippi	697,271	35,103	5.2	576,397	30,385	5.3
North Carolina	1,619,548	387,055	23.9	1,014,353	209,667	20.7
South Carolina	804,858	88,438	11.0	491,148	44,119	9.0
Tennessee	1,297,000	368,753	28.4	673,460	178,324	26.5
Region	8,491,047	1,427,076	16.8	4,829,793	611,943	12.7

Data from Canal Zone not included in tabulation.

Table 2 IV

REGION FOUR: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basement	Per cent With Basement	All Year Units	With Basement	Per cent With Basement
Illinois	3,692,447	2,854,269	77.3	772,129	488,606	63.3
Indiana	1,711,896	999,320	58.4	667,158	376,952	56.5
Michigan	2,845,448	2,204,469	77.5	729,137	487,462	66.8
Minnesota	12,195,911	1,069,946	87.7	529,754	447,125	84.4
Wisconsin	1,416,427	1,272,087	89.8	622,606	533,043	85.6
Region	10,885,809	8,400,091	84.0	3,320,784	2,331,168	70.2

Table 2 V
REGION FIVE: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basements	Per cent With Basements	All Year Units	With Basements	Per cent With Basements
Arkansas	672,967	52,260	7.8	471,374	24,736	7.4
Louisiana	1,146,105	34,701	3.0	499,385	9,805	2.0
New Mexico	322,294	31,084	9.6	223,789	21,767	9.7
Oklahoma	937,815	102,872	11.0	488,059	55,800	11.4
Texas	3,809,086	131,486	3.4	1,092,713	42,463	3.9
Region	6,888,267	352,403	5.1	2,775,320	164,571	5.9

Table 2 VI
REGION SIX: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basements	Per cent With Basements	All Year Units	With Basements	Per cent With Basements
Colorado	742,858	443,118	59.6	223,863	104,594	46.7
Iowa	954,975	828,370	86.7	626,776	539,564	86.1
Kansas	787,508	453,365	57.6	470,322	250,946	53.4
Missouri	1,665,506	1,094,080	65.7	637,884	248,359	38.9
Nebraska	511,473	405,688	79.3	303,789	223,987	73.7
North Dakota	200,465	176,345	88.0	176,345	147,761	83.8
South Dakota	221,636	170,303	76.8	191,307	143,032	74.8
Wyoming	114,572	67,224	58.7	114,572	67,224	58.7
Region	5,198,993	3,638,493	70.0	2,744,858	725,467	62.9

Table 2 VII
REGION SEVEN: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basements	Per cent With Basements	All Year Units	With Basements	Per cent With Basements
Arizona	578,771	25,116	4.3	143,311	10,935	7.6
California	6,976,261	1,170,214	16.8	533,733	62,912	11.8
Hawaii	215,892	29,149	13.5	41,794	6,494	15.5
Nevada	171,658	23,422	13.6	34,344	7,593	22.1
Utah	311,982	213,172	68.3	74,580	42,850	57.4
Region	8,254,564	1,461,073	17.7	827,762	119,884	14.5

Data on Samoa, Guam and Midway-Wake not tabulated.

Table 2 VIII
REGION EIGHT: HOMES WITH BASEMENTS AND HOUSING UNITS WITH BASEMENTS
OUTSIDE OF SMSA's

	State-wide			Outside of SMSA's Only		
	All Year Units	With Basements	Per cent With Basements	All Year Units	With Basements	Per cent With Basements
Alaska	88,555	39,259	44.3	88,555	39,259	44.3
Idaho	238,293	130,456	54.7	201,169	113,433	56.4
Montana	240,755	155,521	64.6	184,563	116,258	63.0
Oregon	735,631	265,237	36.1	287,707	65,531	22.8
Washington	1,204,902	570,500	47.3	418,255	157,107	37.8
Region	2,508,136	1,160,973	46.3	1,180,249	491,588	41.6

relocation in a crisis), the basement resource, too, would be greater than the last column of Table 2 indicates.

Table 3 (along with state-by-state tabulations for each Civil Defense region in Tables 3 I through 3 VIII) gives some basic estimates of percentages of the nation's households that might be accommodated in private home basement shelters under the following assumptions:

- (a) Only 10 per cent of homes with basements are considered "suitable" as shelter
- (b) Only 50 per cent to 80 per cent of the residents would be willing to participate in a home basement sharing program
- (c) On the average, five households would be accommodated in each participating home, including the resident's household and four guests.*

Two caveats are applicable with regard to these assumptions. Without upgrading, as many as 10 per cent of home basements may not be usable as shelter in full, even though a part of the basement may well have the required protection level.

This might mean, indeed, that fewer guests could be accommodated than we assume especially if only a particular corner area of the basement yields the requisite sheltering.

*The calculations are simple:

Take, for instance, the 36,119,790 basements in the whole nation. Of these, some 10 per cent are deemed suitable as shelter, or 3,611,979. Under the 50 per cent participation assumption, this means that about 1,805,990 families would be willing to have their "fallout-suitable" basement used by others. With 5 households in each such basement on the average, 9,029,950 households would be provided in these basements. This is, of course, 14.2 per cent (Table 3) of all households (63,447,857 as per Table 3).

Table 3 does not show that if the non-participating families used their own suitable basements (another 1,805,990), the overall percentage of households sheltered would amount to 17.2 per cent rather than 14.2 as shown.

Table 3

HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL AND CIVIL
DEFENSE POSTURE ASSUMPTIONS WITH 10 PER CENT OF BASEMENTS PROVIDING
PROTECTION OF 40 PF OR ABOVE AND WITH FIVE FAMILIES
PER BASEMENT

	Households	In-place posture		SMSA Relocation	
		50 per cent level	80 per cent level	50 per cent level	80 per cent level
U.S.	63,447,857	14.2	22.8	3.7	6.0
Region I	11,775,568	23.2	37.1	4.2	6.2
Region II	11,518,772	19.0	30.4	4.4	7.0
Region III	8,781,972	4.1	6.5	1.7	2.8
Region IV	10,247,351	20.5	32.8	5.7	9.1
Region V	6,241,650	1.4	2.2	0.6	1.0
Region VI	4,795,911	19.0	30.3	9.0	14.4
Region VII	7,774,092	4.7	7.5	0.4	0.6
Region VIII	2,312,541	12.6	20.1	5.3	8.5

"Regions" are again Civil Defense Regions with exclusions as identified in Table 2.

"Households" refer to "numbers of occupied housing units" and the data are compiled from Housing Characteristics for States, Cities and Counties, Bureau of the Census, 1972, United States Summary Volume.

"X per cent level" (50 and 80 respectively) refers to willingness of residents of homes with suitable (PF level) basements to share with four other families on the average.

Table 3 I
REGION ONE
HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Percent per Household		In-place posture		SMSA relocation	
	Households		50 per cent level	80 per cent level	50 per cent level	80 per cent level
Connecticut	933,269	3.2	23.6	37.8	4.0	6.3
Maine	302,923	3.2	23.1	37.0	17.4	27.8
Massachusetts	1,759,692	3.1	24.3	38.8	3.6	5.8
New Hampshire	225,378	3.1	23.7	37.9	17.0	27.2
New Jersey	2,218,182	3.2	21.6	34.5	4.1	6.6
New York	5,913,861	3.0	23.3	37.4	2.9	4.6
Rhode Island	291,165	3.1	24.4	39.0	3.0	4.8
Vermont	132,098	3.2	24.2	38.7	24.2	38.7
Region	11,775,568		23.2	37.1	4.2	6.2

Table 3 II

REGION TWO

HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Persons per Household		In-place posture		SMSA relocation	
	Households	Persons per Household	50 per cent level	80 per cent level	50 per cent level	80 per cent level
Delaware	164,804	(3.2)	20.9	33.4	3.1	4.9
D.C.	262,538	(2.7)	22.2	22.2	0.0	0.0
Kentucky	983,665	(3.2)	11.2	17.9	4.6	7.3
Maryland	1,175,073	(3.2)	19.8	31.6	2.4	3.8
Ohio	3,289,432	(3.2)	19.9	31.9	4.1	6.6
Pennsylvania	3,705,410	(3.1)	23.4	37.4	4.7	7.6
Virginia	1,390,636	(3.2)	11.3	18.1	4.8	7.6
West Virginia	547,214	(3.1)	14.3	22.9	9.5	15.2
Region	11,518,772	-	19.0	30.4	4.4	7.0

Table 3 III
 REGION THREE
 HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
 AND CIVIL DEFENSE POSTURE ASSUMPTIONS
 WITH FIVE FAMILIES PER BASEMENT

	Households	Persons per Households	In-place posture		SMSA relocation	
			50 per cent level	80 per cent level	50 per cent level	80 per cent level
Alabama	1,034,113	(3.3)	3.9	6.2	1.3	2.0
Florida	2,284,786	(2.9)	0.9	1.4	0.2	0.4
Georgia	1,369,225	(3.3)	5.6	8.9	1.4	2.2
Mississippi	636,724	(3.4)	1.4	2.2	1.2	1.9
North Carolina	1,509,564	(3.2)	6.4	10.2	3.5	5.6
South Carolina	734,373	(3.4)	3.0	4.8	1.5	2.4
Tennessee	1,213,187	(3.2)	7.6	12.2	3.7	5.9
Region	8,781,972	-	4.1	6.5	1.7	2.8

Table 3 IV

REGION FOUR
HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Households	Persons per Households	In-place posture		SMSA relocation	
			50 per cent level	80 per cent level	50 per cent level	80 per cent level
Illinois	3,502,138	(3.1)	20.4	32.6	3.5	5.6
Indiana	1,609,404	(3.1)	15.5	24.8	5.8	9.4
Michigan	2,653,059	(3.3)	20.8	33.2	4.6	7.3
Minnesota	1,153,946	(3.2)	23.2	37.1	9.7	15.5
Wisconsin	1,328,804	(3.2)	23.9	38.3	10.0	16.0
Region	10,247,351	-	20.5	32.8	5.7	9.1

Table 3 V
HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Households	Persons per Household	In-place posture			SMSA relocation	
			50 per cent level	80 per cent level		50 per cent level	80 per cent level
Arkansas	615,424	(3.1)	2.1	3.4		1.4	2.2
Louisiana	1,052,038	(3.4)	0.8	1.3		0.2	0.4
New Mexico	289,389	(3.4)	2.7	4.3		1.9	3.0
Oklahoma	850,803	(2.9)	3.0	4.8		1.6	2.6
Texas	3,433,996	(3.2)	1.0	1.5		0.3	0.5
Region	6,241,650	-	1.4	2.2		0.6	1.0

Table 3 VI

REGION SIX

HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Households	Persons per Household	In-place posture		SASA relocation	
			50 per cent level	80 per cent level	50 per cent level	80 per cent level
Colorado	690,928	(3.1)	16.0	25.6	3.8	6.0
Iowa	896,311	(3.0)	23.1	37.0	15.0	24.1
Kansas	727,364	(3.0)	15.6	24.9	8.6	13.8
Missouri	1,520,567	(3.0)	18.0	28.8	4.1	6.5
Nebraska	473,721	(3.0)	21.4	34.2	11.8	18.9
North Dakota	181,613	(3.3)	24.3	38.8	20.3	32.5
South Dakota	200,807	(3.2)	21.2	33.9	17.8	28.5
Wyoming	104,600	(3.1)	16.1	25.7	16.1	25.7
Region	4,795,911	-	19.0	30.3	9.0	14.4

Table 3 VII

REGION SEVEN
HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Households	Persons per Household	In-place posture		SMSA relocation	
			50 per cent level	80 per cent level	50 per cent level	80 per cent level
Arizona	539,157	(3.2)	1.2	1.9	0.5	0.8
California	6,573,861	(2.9)	4.4	7.1	0.2	0.4
Hawaii	203,088	(3.6)	3.6	5.7	0.8	1.3
Nevada	160,052	(3.0)	3.6	5.8	1.2	1.9
Utah	297,934	(3.5)	17.9	28.6	3.6	5.8
Region	7,774,092	-	4.7	7.5	0.4	0.6

Table 3 VIII

REGION EIGHT
HOME BASEMENT SHARING POTENTIAL UNDER ALTERNATIVE PARTICIPATION LEVEL
AND CIVIL DEFENSE POSTURE ASSUMPTIONS
WITH FIVE FAMILIES PER BASEMENT

	Households	Persons per Household	In-place postures		SMSA relocation	
			50 per cent level	80 per cent level	50 per cent level	80 per cent level
Alaska	79,059	(3.5)	12.4	19.9	12.4	19.9
Idaho	218,960	(3.2)	14.9	23.8	13.0	20.7
Montana	217,304	(3.1)	17.9	28.6	13.4	21.4
Oregon	691,631	(2.9)	9.6	15.3	2.4	3.8
Washington	1,105,587	(3.0)	12.9	20.6	3.6	5.7
Region	2,312,541	-	12.6	20.1	5.3	8.5

At the same time, more than 10 per cent of basement areas or even of whole basements may serve as adequate shelter if minimum upgrading of the basement's protection capability were to be undertaken either under normalcy conditions or, especially, in a crisis.

Thus our assumptions are both optimistic and conservative. The analytic results then provide a crude, but usable, benchmark in terms of which the contributions which home basements can make to the national shelter resource can be gauged.

In-place sheltering, with 50 per cent participation and 10 per cent basement suitability, might thus contribute toward sheltering some 14.2 per cent of the nation's households (over 27,000,000 people given average sizes of households); and if all SMSA inhabitants were relocated, the same assumptions lead to an estimate of 3.7 per cent sheltered families. The 80 per cent participation level would lead to protection for 22.8 per cent of households on an in-place basis, and 6.0 per cent upon full relocation of all SMSA's.

If we assume that other usable basements would also be deployed as shelter though not for basement sharing, the resident families would need to be added to the above totals. Under such conditions,

- * 17.2 per cent of all households in the U.S. could be sheltered with 50 per cent participation (and, by implication, 50 per cent non-participation) in an in-place posture;
- * 24.6 per cent could be accommodated with 80 per cent participation
- * 4.4 per cent of the nation's households could be taken care of in basements if all SMSA's were vacated, and if there were 50 per cent participation in home sharing programs
- * 6.3 per cent would be sheltered, under these assumptions, at 80 per cent program participation level.*

*To make the point clear: this amounts to 6 per cent of all households (63,447,857) plus 20 per cent of non-participating households with suitable shelters (suitable shelters = 10 per cent of 9,460,418 of basements outside of SMSA's). 6.3 is then the percentage of participating households (each with four families in addition to the resident) plus non-participating families (each sheltering the residents household only).

The home basement resource is clearly not a negligible one when considered in toto, though regional and state-by-state variations make for a highly complex picture.

In the in-place situation (and with 50 per cent participation in a sharing program), Rhode Island, Massachusetts, Vermont and North Dakota could provide for almost one out of every four households in their respective states; while Florida, Mississippi, Louisiana and Texas might have placements for only one in a hundred households.

On the assumption of SMSA relocations (and 50 per cent participation) Vermont and North Dakota would be in a position to help shelter over 20 per cent of households, while Florida, Louisiana, Texas and California would have spaces for only about 2 households per thousand.

Differences by a factor of 25 are involved when in-place sheltering is postulated, and they entail a factor of 100 for the type of relocation which we have explicitly considered (all SMSA's and each SMSA as a whole).*

Many basements may have protectability of PF 20 and over. If the planners can settle for this, or can settle for such protection levels in at least some parts of the country, the 10 per cent assumption is exceptionally conservative and the results of Table 3, in general or for appropriate states, may need to be multiplied by a factor of 7.5.

*Given Tables 2 and 3 calculations of other estimates, that is involving assumptions other than those specified, is obviously simple. If 15 per cent of homes had suitable basements but the 50 per cent participation assumption were maintained, the contributions which home basements might make to protecting the nation's families would lead to a multiplication of the in-place and "outside of SMSA's only" percentages by $15/10 = 1.5$. If the assumption regarding numbers of basements with PF ≥ 40 were retained, but lower participation level were expected, say of 40 per cent, the 50 per cent percentages of Table 3 would be multiplied by $.8 (=40/50)$. Similarly, alternative assumptions concerning numbers of families per home basement shelter would modify the results (say, with other assumptions constant, a total of three families per basement rather than 5 would lead to the reduction in expected shelter resource by $.6 (=3/5)$.

Crisis relocation planning, of course, is aimed at moving population from higher to lower, or low, risk areas. Hence, the expected risks in host counties and host communities must, by definition, be lower than the risks in relocatee cities and counties, including the risks associated with fallout.

Hence, under relocated conditions PF 20 might be altogether satisfactory in most instances even if upgrading of extant shelter facilities were disregarded. But, of course, population relocation presupposes a severe crisis, and a severe crisis creates circumstances under which upgrading of public shelters, home basements and any other sheltering resources would seem quite feasible, and the construction of expedient shelters, too, would become altogether possible.

How reasonable are our assumptions, however, to begin with?

For one, the Home Shelter Surveys in their initial phase disclosed just about 10 per cent of best rates of basements with $PF \geq 40$. Subsequent surveys in the 26 states revealed similar results, with 14 per cent being perhaps closer to the overall estimate.

We have assumed, quite conservatively, that only 10 per cent of basements would provide "suitable" shelter. In the studies of the Colorado Springs area, the data show that some 12.6 per cent of all homes surveyed would be "suitable" as shelter.*

Participation level in a home basement sharing program is much more likely to be closer to the 80 per cent than to the 50 per cent assumption. In each of the major regions of the nation (Northeast, North Central, South and West), over 70 per cent of respondents with basements were willing to "allow others to use their basement" and also "allow others to be assigned" to their basement by local civil defense officials.¹³

*Combining total sample of both Group 1 and 2, $N = 4,336$. In this total group, there were 548 suitable basements, or 12.6 per cent. Respondents who did not react to mailouts or submit their plans are included in our overall calculation "as if none had a suitable basement"--a conservative assumption. John R. Christiansen, Field-Testing Procedures for Using Home Basement Shelters as Group Shelters (Phase II), Brigham Young University, September, 1975.

If we pool Christiansen's data both from Colorado Springs itself and from the potential host areas involved in the second research phase (Teller, Gunnison and La Plata counties), 75.5 per cent of the respondents with suitable basements* were willing to share.¹⁴

Sheltering for relocatees presents a slightly different problem. In the 1972 national study, we have only estimates regarding willingness to shelter others or to have others assigned as shelterees for non-SMSA areas as such, and thus without specifying that such guests might be from nearby cities. Over 73 per cent of the respondents in non-urban areas of the country who had basements (though not necessarily suitable ones) claimed a willingness to share and to have others assigned to their homes.¹⁵

In the Colorado Springs inquiries, about 50 per cent of the residents were explicitly willing to provide shelter for outsiders--and these were, in the course of the communications between researchers and residents, defined as "relocated families from Colorado Springs".¹⁶

Compared with willingness to provide for neighbors (and "people in the area"), the willingness to shelter "outsiders" is lower.

We think, however, that the national reality falls somewhere between the two results. In the national survey, it was in no way made clear to any respondent that basement sharing might involve people who would be, possibly, relocated from other areas of the country.

Yet, the response to permit "assignment of others" (without knowledge of who such others might be) is highly indicative.

In the Colorado Springs area tests, the researchers--precisely in order to establish the sensitivity of results to the alternatives--clearly specified a distinction between "locals" and "Colorado Springs

*Without going into details of the Christiansen research design, "suitability" essentially meant that none of the basement walls extended beyond two feet above ground. In Colorado Springs, two major groups were studied (approached somewhat differently), and two major experimental groups were also involved in Durango (La Plata), Gunnison and Teller (Woodland Park). Overall, 1,255 respondents "with suitable basements" were involved.

relocatees", and this led to lower, though not low, receptivities (of the order of about 50 per cent). The result may be, to a small degree, an artifact of this "local" versus "relocatee" dichotomization with which the respondent was faced, and the result of our national study may be, to a similarly small degree, an artifact of obliterating, by the nature of the question, any such distinction.

Thus communications strategies which would neither underplay nor overplay the place whence shelterees may come, neither conceal nor highlight it, would most probably produce actual results somewhere between the Christiansen and our own data.

This amounts to saying that we would expect the willingness of host area residents to provide shelter for relocatees to come to some 60 per cent or thereabouts, rather than the 73 per cent (of our study) or the less than 50 per cent (of the Colorado Springs research by Brigham Young University researchers).

Even so, our lower boundary of expected participation on which calculations of Table 3 are based (50 per cent) will prove to be conservative if actual attempts are made to incorporate home basements into a national shelter system.

The assumption that four families, in addition to the resident's own households, might be sheltered is, possibly, an optimistic one. The Colorado Springs results suggest that, by and large, about one in three people with suitable basements might want to shelter as many as four families, and that two families may amount to a modal preference (that is, two guest households in addition to one's own).

Nonetheless, with average basement size of 1,000 square feet and average household size of about 3.1 (nationally: with slight variations, between 2.9 and 3.4 for the various states), we did not think it unreasonable to predicate our gross estimates of home basement sharing potential on five families per suitable basement. This is tantamount to assuming over 60 square feet per person, a standard exceeding by a factor of 1.5 peacetime disaster placements of evacuees. And the experience with accommodations for evacuees in peacetime disaster has been a good one, so that the "packing factor" of shelter has never entered discussions of feasibility or planning.

In fact, our assumption of five families per basement may be conservative during a crisis even though it may be slightly risky for normalcy planning purposes. But this is compensated for by the definite conservative bias of our assumption about numbers of shelters and about participation rates.

In a crisis situation itself, the probabilities of helpful behavior are, in fact, further increased.

Thus far, we have considered our estimating assumptions in the context of normalcy planning.

The 1968 University of Pittsburgh national survey provides good guidelines as to what might happen under emergency conditions:

- * 87.9 per cent of our people say that they would make their homes available to "area people"
- * 76.7 per cent would make their homes available to "people from outside the area."¹⁷

The Colorado Springs data lend further credence to these results: 90.4 per cent of the (interviewed) respondents said that they would take "other families who live near you into their home", and 70.7 per cent could be "counted on" to take in Colorado Springs relocatees.¹⁸

In fact, if only non-SMSA residents are considered in the 1968 Pittsburgh study, 87.5 per cent would share with "area people" and 74.6 per cent with people from outside the area.¹⁹

In other words, willingness to express a commitment to share one's home is higher if a crisis situation is postulated than if the commitment is to be made "in general" and in the absence of a threat, or at least of the rhetoric of threat (in the form of question wording).

We think that actual evacuation experiences support the notion that actual home sharing, as contrasted with normalcy or even crisis based expressions of plans and commitments, would exceed all these estimates. But, of course, it cannot exceed the final estimates by much simply because of the ceiling effect of everyone participating. Indeed, we reach 90 per cent levels of commitment when crisis co-operation is discussed in a non-crisis situation, and it is hard to see how much more could be expected even in actuality. All the factors taken into account, what might we use as reasonable national benchmarks?

- A. In a normalcy situation and with in-place sheltering, we would expect between 70 and 80 per cent of Americans to make commitments to provide shelter (if their own is suitable to begin with) for at least one additional family, and generally, for at least two such guest families. In-place sheltering, of course, assumes that most such guest families would be people from the resident's "own area", however loosely defined.
- B. In a normalcy situation and with relocation prospects, we would expect 55 to 65 per cent of families to be willing to provide for relocatees.
- C. In a crisis situation and with in-place sheltering, we would expect the cooperation of between 80 to 90 per cent of the nation's households.
- D. In a crisis situation and with relocation mode, we would expect participation levels of between 70 and 80 per cent of our people in the way of commitment, made during the crisis and carried out during the crisis if needed, to shelter outsiders.
- E. Apart from any commitments, we would expect that actual participation by sharing homes, basements and whatever in an actual emergency would characterize between 90 to 95 per cent of our people --whether under the "in-place" or the "relocation" assumptions.

But all of these conclusions are somewhat tentative. Not because we lack confidence in the research results. Indeed, the conclusions are based on research data which have, in part, been well validated and which are, for the remainder, altogether validatable.

Rather, these conclusions are predicated on particular approaches to the home basement sharing program and to its planning.

The approaches which promise to yield the levels of participation specified here, and which thus may lead to a significant

dent into the national shelter deficit (somewhat of the magnitudes of the results of calculations in Table 3, except for the fact that the 50 per cent level should be multiplied by about 1.8 to deal with the suggested 90 per cent participation under "crisis conditions") must now be considered and subjected to a critical assessment.

The next part of this research report addresses these issues.

PART TWO

V. INTRODUCTION

An important, if not some sense mainly intuited, conclusion from the Brigham Young University report by Christiansen should be repeated:

"Perhaps the most important limitation concerns the parameter of maximizing voluntarism and freedom of choice. The entire design of the field-test responded basically to the social responsibility norm. Thus, citizens were encouraged to produce behavior reflecting the widely recognized and powerful norm. The basic element of this norm is, of course, that individuals should help those who are dependent and need assistance. Most charitable organizations such as the United Fund, Red Cross, Heart Fund, etc. make use of this pervasive and behavior-evoking norm very successfully.

One condition of the successful evoking of this norm, however, is freedom of choice. It must be understood, therefore, that any attempt to change the nature of the methods used in the field-test towards mandatory behavior through law, edict, or simple exploitive coercion would likely change the nature of the response and produce hostility, feelings of exploitation, resistance, and most likely failure."¹⁹

We share this view. Throughout, we have been assuming that home basement sharing programs, as concepts and, if adopted, as procedures (with plans as output) are predicated on voluntary participation of American families, and that the norm which stresses helpfulness behavior for those in need is both a real and appropriate standard to invoke, whether by implication or by more explicit encouragement of our citizenry. Nor do we assume that there is any likelihood that

DCPA or the Department of Defense or the President might ask the Congress to adopt procedures, and fund a program, which would make participation in home basement sharing mandatory.

Even were such a recommendation made, we do not expect Congress to accept it.

Even were Congress to accept some mandatoriness provision with regard to home basement sharing, we do not expect that a program of this kind would succeed as well as one which allows, indeed, for freedom of choice on the part of our citizens--both those who might be hosts to others and those who might be guests in times of need.

For these reasons, we shall simply disregard program options other than those into which the standard of volunteering has been built.

In any event, an effort to incorporate home basement sharing into the nation's sheltering resources, several major program steps seem required:

- A. Identification of homes with basements
- B. Determination of suitability of basements for sheltering
- C. Determination of possible numbers of shelter spaces in each suitable basement
- D. Determination of the resident's and resident family's willingness to participate in home basement sharing
- E. Determination of willingness on the part of Americans without suitable basement sheltering of their own to become guests of families with suitable basements
- F. Allocation of guest households to host households
- G. Feedback to hosts
- H. Feedback to guests

The extent to which Crisis Oriented Planning is feasible depends, obviously, on the minimum amount of time that might be required to accomplish each of the major steps (or objectives delineated by these steps), and on the time required to put such plans into operation should the crisis events make this necessary.

Normalcy Oriented Plans are, of course, not time-constrained in this manner though imaginable scenarios might include the intrusion of a crisis situation into an ongoing NOP process. In other words, a crisis could come about at some time during the home basement sharing planning process itself so that some of the major steps thereafter would become severely time-constrained.

Yet, to deal with minimum time requirements for the planning process as a whole forces us into a great number of assumptions about most likely future histories of plausible crises with special regard to their duration from onset to resolution (in turn, by the crisis subsiding or ending in a cataclysm). We may be willing to make some assumptions that would be called for, but it may be more prudent to address the questions which bear on Crisis Oriented Planning (COP) somewhat differently, to wit:

What can be done, and how, in one day (say, about 24 hours)?

What can be done, and how, in two days?

In three?

This proves to be a desirable way of rephrasing some of the issues mainly because some insight into what is doable in one day or in two or three would provide the nation with fallback possibilities of minimal variety (though, perhaps, best given the time constraint) should viable plans not exist at such a time, or should the crisis be one with the characteristics of a rapidly-evolving disaster.

Steps A through D are applicable to both in-place and relocatee sheltering. In other words, whether or not Americans would remain in places where they normally live (or where a crisis situation might face them while travelling, vacationing and the like) or whether city dwellers in all, most or some cities and city-like areas would be relocated, it would be necessary to establish the total national basement resource.

Step D, of course, which calls for the determination of willingness to participate in home basement sharing might yield different empirical results dependent on whether the in-place or the relocated postures are postulated. The data from the Colorado Springs area do suggest, and even strongly so, that there may be important as

well as rather large differences in the willingness of Americans to provide sheltering hospitality for others in their community ("neighbors", more or less) and for "outsiders" (from "the city", so to speak).

Similarly, Step E may be somewhat posture-dependent: willingness to go to someone else's home, even if offered, may be a factor of importance in the in-place situation, but it would clearly have different implications for already dislocated evacuees. As we shall see, however, this, too, is only partly the case.

In turn, Steps F through H are distinctly posture-dependent. In this regard, indeed, Step F is of strategic importance. Different allocation measures, including shelter-packing factors, will be appropriate, if not necessary, under relocated than under in-place conditions.

Feedback provisions, to both potential guests and hosts, seem affected both by the planning situation (whether under normalcy or during crisis) and by the national posture (whether in-place or relocated options are involved). Under normalcy, feedback plans could be easily seen as providing information to citizens as to where to go (to guests) and as to who will come (to hosts) in the in-place situation.

If relocation mode were operative, feedback regarding home basement sharing plans would have to become an integral part of relocation planning because at least the relocatees--and their possible host area inhabitants as well, it would seem--would have to be told where to go in area terms (or where from evacuees would be coming into a host community) as well as to where basement shelter can be found in that area.

This raises the question as to the need for providing feedback of any kind, or how much of it and at what level of specificity, as an aspect of NOP's since the information both to guests and hosts would have to be rather complex, and would have to be bifurcated to provide for both in-place and relocated modes of adaptive behavior. We shall, of course, address this issue in more detail as we proceed.

Feedback, as an aspect of COP, would tend to be somewhat simpler: in a crisis situation, plans for basement sharing would

obviously have to become part and parcel of the overall civil defense posture of the nation--that is, some level of determination will have already occurred as to whether relocation might be, in fact, considered or whether the nation will most probably absorb the crisis without the need, or decision, to relocate.

In other words, both guests and hosts in the COP might need feedback only as to coping behavior applicable to that posture options (in-place or relocation) which will correspond to the crisis actuality.

There are, of course, some further dimensions of the home basement sharing planning problem which need to be at least mentioned at this time, even their more detailed consideration must occur in the context of further analyses to follow.

COP (Crisis Oriented Planning) for HBS (Home Basement Sharing) would, it seems, dictate a (near) simultaneous nationwide effort.

In terms of outcomes, we would live with whatever would actually happen in the way of COP successes and defaults. By definition, a crisis situation would allow for few correctives, if any at all, so that all factors which might make the preparation for crisis oriented planning faulty in some respects would tend to show up "under fire," as it were, and with little chance of iterating the procedures or the plans or both.

In turn, NOP for HBS allows more flexibility. This means that some approaches may lead to a (near) simultaneous development of the program throughout the nation; but other approaches may make it preferable to use a step-wise method--perhaps region by region, or state by state (actually thus, region after region, state after state). That the planner can learn from initial experiences, that procedures can be debugged and improved, that resultant plans can be iterated (until tolerable levels of adequacy are reached) goes without saying.

This does not mean that we would not want to begin with the best possible procedures (to arrive at HBS plans), but it does mean that even the best procedures we may imagine now can stand some improvement, and perhaps even drastic revision, in their confrontation with reality.

The flexibility advantage coupled with the possibility of using past experience as a way to improve subsequent performance are

factors of such importance that it would seem almost obvious that planning (not only of home basement sharing but of anything that matters) under "normalcy" conditions is to be preferred to crisis oriented planning.

Of course, we think this to be the case: thus we view crisis oriented planning (and the normalcy plans to do crisis oriented planning) as a second best alternative, a fallback system of approaches in a world in which decisions to make normalcy planning possible might not be forthcoming.

That HBS plans arrived at under normalcy conditions could then be further augmented and refined in light of subsequent crisis events is obvious as it is desirable. We have already stressed the fact, or what to us seems like a research-established fact, that actual levels of participation in a crisis would exceed the participation levels establishable in the absence of a crisis. Thus more people would come to be sheltered in reality than we would expect on the basis of plans generated in a non-crisis world.

But this actually is still another virtue of an effort to carry out HBS planning under "normalcy": the resultant sheltering distribution of our people, whether on an in-place or relocated basis, would be conservative and would underestimate subsequent (crisis) actualization (by a factor of, perhaps, .2). If NOP's can be such as to provide adequate shelter for all of our people, the crisis actualization allow the use of essentially only preferred shelters (and higher PF's) and still shelter the whole nation: whether such a conclusion is really valid, is an empirical question which we cannot resolve.

To be sure, we are not assuming that home basement shelters would displace public sheltering altogether. For one, it may not be possible to discover a sufficient number of suitable basements with adequate numbers of shelter spaces (at whatever packing level) with willing participation of the residents. Thus public shelters remain as important as ever if only for that reason, or at least until we would disclose that private homes can shelter all Americans and would, in fact, shelter them.

Under relocated conditions, we see no way in which public shelters could ever be dispensed with even were this desirable.

Coupled with this is the preference of a fair proportion of American families to use public, rather than private, sheltering. Even should HBS plans prove to lead to a resource of vast magnitude, and should some Americans, knowing that the possibility of sharing homes does exist, change their preference from public to private facilities, a non-negligible percentage of our people would still choose public over private shelters.

This amounts to saying, of course, that the home basement resource is not an alternative to public shelters but an additional resource of which as much needs to be made as possible to increase the overall flexibility of the system should it have to be put to use. It also suggests that dramatic packing factors, such as 10 square feet per person at the extreme, need probably never be considered seriously and HBS plans can reflect not only willingness to share but also willingness to share with particular numbers of others rather than with all a given basement might accommodate in terms of square footages.

This means, indeed, that we probably need not be concerned too much over the implications for willingness to participate in HBS of having to tell someone with a 1,000 square foot basement that 100 people will--or should-- be harbored there.

Under relocated conditions, and in some of the nation's locations (where both basements and surveyed public shelters might be scarcer, if not quite scarce), it may become necessary, however, to go to the 40 square foot standard of peacetime disaster sheltering, and to encourage the host residents to be willing to take in as many people as the 40 square foot standard would imply.

Of course, perhaps higher packing than this may prove quite necessary. In this case, the 10 square foot standard applicable to sheltering under nuclear hazards may come into play. Whether home basement sharing, in terms of public acceptability, would be compatible with such demanding standards of accommodation is not altogether clear, but there is no a priori reason for the planner to exclude the possibility.

In any event, however, the actual "packing" considerations should reflect the location-specific availabilities of public shelters

and of home basements with numbers of shelterees determined by the hosts themselves along with encouragements which would help bridge whatever sheltering deficits such procedures would retain.

On the whole, the basic rules seems simple enough: in each location, the best available space would be used as shelter for the maximum number of people, and spaces which provide less than location-optimum protection would be used in descending order of priorities. For the key objective, of course, is to provide the best possible protection for the greatest numbers of people, and the packing factor must be compatible with this underlying strategy. National planning for the use of home basements, whether on an in-place or relocated basis, needs to reflect such a criterion.

And finally, along these lines, we must also assume that in some locations, hopefully but a relatively few, sheltering deficits might remain even upon upgrading: clearly, the consideration of construction of expedient shelters under crisis conditions would have to be incorporated into the overall national shelter plan (and very explicitly for such locations).

Two more major dimensions of HBS planning must be touched upon in an introductory way. One has to do with the nation's high (geographic and residential) mobility. The other one, with program "profile", that is the extent to which wide dissemination in the nation's media of the program and about the program, while being conceptualized or while planning is underway, might serve to benefit, or degrade, the effort. Table 4 shows that many Americans, indeed, move just within the span of one year: renters much more so than owners, a result which cannot be surprising. Nationally, one in five households moved into their 1970 residence between the beginning of 1969 and March 1970.²¹

If home basements, and among them suitable home basements, are uncorrelated with the probabilities of residential change--as seems reasonable to assume--then it follows that family-specific guest-host relationships would be highly sensitive to mobility, and that HBS plans would have to be updated almost continuously. This requirement holds in so far as plans would be based on names of residents, whether

Table 4
NATIONAL RESIDENTIAL MOBILITY
(1969 - 1970)

	Number	Per Cent Movers
All occupied housing units	63,444,750	21.5
Owner occupied	39,885,092	10.8
Renter occupied	23,559,658	39.8

guests or hosts, rather than on residential locations of host basements and guest families.

This alone would suggest that we need to explore the possibility of basing HBS on residences of both hosts and guests, and assume that there might be some attrition, over time, in willingness to participate when new residents would be contacted in a situation requiring not only expressed willingness to share but actual sharing. Such "attrition", if any, should not be excessive because there are no inherent reasons for which we would have to assume that new inhabitants of a participating residence would be less willing, on balance, to be involved in the program than the original residents had been.

In our report on Home Basement Sharing, we ended the paper about as follows:

"A low profile program is, in fact, again in order. This is so because there is no possible reason why the public would have to be first convinced that a home basement sharing program makes some sense. Our results show clearly that most Americans are already of that opinion and that they are ready to cooperate. Indeed, a matter of fact approach seems indicated by the results: we are doing what you, our people have essentially told us we ought to try."²²

In turn, Christiansen's conclusion in this regard is somewhat different from our own:

"Using the mails as the principal means of contact with respondents reduced the visibility of the effort to a minimum. Relatively few newspaper releases were made, and then only to allay possible anxiety and misunderstanding, and provide legitimacy for the effort. Although some TV and radio coverage was given in addition to that of newspapers, these releases were usually unsolicited, and resulted from the reporter's own interest in the effort. No attempt was made to provide publicity and acceptance through

contacts with business, religious, fraternal, political, military, or educational leaders. Most respondents interviewed appeared to have heard of the test only through the contacts which were part of the test.

It is reasonable to assume, therefore, that a higher profile of the field-test (e.g. a more dramatic or threat-oriented approach) would have resulted in greater participation on the part of the respondents,"²³

Christiansen's conclusion may well be the right one.

However, our own emphasis on low profile for all technical programs, whether DCPA's or those of other agencies of Government, is based more on a sense of evidence which suggests that the consequences of higher profile communications are less than predictable at the outset--and that while higher participation rates could result, lower ones are at least as likely. The reason for this rests with the fact that sharply profiled programs are easily subject matter of controversy especially if everything does not go as well as it might. And that controversy provides its own fuel for further controversy. And that controversy often leads to crystallization of favorable as well as unfavorable positions, and the manner in which the community divides itself has direct bearing on attitudinal and behavioral responses of those members of the community who may not have adopted either extreme view. The result is at least some increase in ambivalence regarding such programs (are opponents of various efforts, in fact, ever completely "wrong"?) with enhanced chances for indecision which then tends to lower participation probabilities.

At the same time, it seems also indicated by the nature of HBS that a program of this type would be less vulnerable even in a higher profile environment than other programs because of its clearly voluntary character, because of its invocation of an altruistic norm (of helping others who need help) which can be hardly made controversial, and because of the large reservoir of good will which surrounds home basement sharing concepts at this time throughout the nation.

Furthermore, home sharing under natural disaster conditions has been an actualized, nor merely verbalized, norm and there has been little, if any, evidence of crises between disaster victim relocatees and their hosts.

However, there are some aspects of HBS planning which might be easily controversial, and the more so the higher the program profile: we can easily see that serious nation-wide dialogue, along with localized arguments, could result over the appropriateness of allocating needed funds to carry out home basement sharing planning. And we can easily see some negative publicity surrounding the occasional resident who, as in the days of family shelter planning, would claim that "others can enter his home only over his dead body", or that he "would protect his basement with a gun in hand" and the like. A dozen such occurrences in the whole country might be quite probable, but their newsworthiness--precisely because they are such rare and dramatic events (in their rhetoric not in their reality)--would make such "opposition" seem much bigger than it ever could become.

Furthermore, our notion of low, or lower, profile programs is not one of silence. Rather, it has to do with the uses of communications at the minimum level which is compatible with the successful planning effort and with high probabilities that the plans will be implemented by the nation's public in appropriate coping behavior.

In this regard, our statement about the meaning of "low profile" programs in the crisis relocation context is applicable to home basement sharing as well:

"Now we mean by a 'low profile' program an effort which does not require large-scale publicity in the course of planning, even though the eventual viability of the plans may require that the public be enlightened as to the full nature of the plans so that effective responses in a crisis environment become somewhat, if not considerably, more likely.

A 'low profile' undertaking is one also which does not necessitate the mobilization of public, or organized support in the process of the technical

formulation of plans, or of their technical feasibility assessment.

At the same time, the idea of a 'low profile' program in no way assumes 'secrecy', or 'non-responsiveness' to legitimate queries by citizens and media alike, or 'official silence' with respect to requests for information."²⁴

We have brought up the matter of program profile once again because it is an important one. As we consider each of the major sub-objectives of home basement sharing planning, each of the major steps that would need to be accomplished both in NOP's and COP's, consideration must be given to communications profiles most compatible with program needs, and the effect of either higher or lower profiles (than those most appropriate) as facilitators or impediments.

VI. AVAILABILITY OF BASEMENTS

It is of little help to the planner to know how many basements there are in the nation, in a state, in a county (parish) or in a city. Such aggregated knowledge is useful in a pre-planning feasibility stage to determine, at most, whether the basement (and, of course, cellar) resource as potential shelter is tolerably large to warrant investment of time and energy (and its money costs) into a program which would include basements into the national shelter system.

Even the highly conservative aggregate assumptions displayed in Table 3 suggest that the basement resource is of potential value and, in some locations, of major importance.

HBS (Home Basement Sharing) planning cannot, however, remain at these levels of aggregation to be of operational use. The planner must determine the actual location of each basement, or at least of those basements to be considered for inclusion into a shelter system. Clearly then, the objective of the first major phase of potential HBS planning is:

to determine which private homes have basements or cellars.

Suppose, for this purpose, that we consider as "private homes" dwellings which include not more than four housing units.

Somewhat incorrectly, we shall also assume that structures with more than four dwellings (housing units) are almost always likely to have basements or cellars.

To obtain some estimates as to the magnitude of a task resulting in the determination of presence or absence of a basement, we shall again rely on the (by now somewhat, but not grossly, obsolete) 1970 Bureau of the Census data. Table 5 provides a summary of the results at the national and (Census) regional levels. The arithmetic for states, counties, SMSA's or cities, of course, would be the same.

Table 5
STRUCTURES WITH ONE TO FOUR HOUSING UNITS

	Number of Structures	Per cent of all*	Number of Basements**	Per cent Basements**
United States	55,795,501	82.4	26,283,313	47.1
Northeast	12,329,488	76.1	10,771,865	87.3
North Central	16,033,983	85.8	11,999,167	74.8
South	17,976,057	86.1	2,368,697	13.2
West	9,455,973	79.2	1,143,584	12.1

* "All" structures are those identified in Table 2. Also, see Table 22, Housing Characteristics...Bureau of the Census.

** It is assumed (a) that all structures with more than four housing units have a basement or cellar(s), and (b) that no trailers or mobile homes have basements associated with them.

Under the assumptions specified, some 82 per cent of all housing units are in one to four unit structures--about 47 per cent of them can be expected to have basements.

To determine only the presence or absence of a basement or cellar is a simple matter:

- (a) Visual inspection (by walking along a street or from a slow moving vehicle would suffice in a large number of instances;
- (b) A brief stopover in dwellings where visual inspection leads to a doubtful determination would allow the completion of such a basement census.

We would estimate about 2 to 5 minutes per observation, including its recording onto street (block) maps.* For the nation as a whole, the 5 minute assumption involves 55 million observations (see Table 5) to locate the 26 million basements. On an eight-hour a day basis, 581,203 man-days would be involved. The lower limit of 2 minutes per observation, 232,481 man-days would be called for.*

If these observations were spread over a period of two or three weeks, in most instances, even local police force members, perhaps with the help of fire fighting forces, could accomplish the required task without major impact on their other duties.

Let us note how close such estimates can, in fact, be even though they are based on somewhat crude statistics:

*In the City of New Orleans, there were (1970) 171,865 one to four dwelling unit structures;

*There were (1974, Crime in the United States, Uniform Crime Reports, November, 1975, Table 74) 1,837 law enforcement officers and civilians (full-time).

*Some readers might consider this estimate to be too low. If, for instance, many stopovers were called for and the residents wanted more information about the purposes and implications of the survey, more time than five minutes might be spent on the average. The reader who may wish to make an alternative assumption should simply multiply the man-days and man-hours used here in the way of examples by a factor M/5, where M stands for the number of minutes per observation the reader prefers to assume. If 10 minutes turned out to be the average, the results would obviously be multiplied by 10/5, or a factor of 2.

If all law enforcement employees (an unrealistic assumption, of course) were to participate in this initial survey of basement identification, each would have to perform 93.6, or about 94, observations. At the 5 minutes per observation level, this amounts to about 7.8 man-hours per employee.

Spread over a two week period, just about half-an-hour per day would be involved in identifying and mapping the 13,000 or so basements in the City of New Orleans.

Over a somewhat longer period of time, such an identification survey could be performed even by only those officers who patrol the city and while they are carrying out their normal duties.

Volunteers from among the citizens could, indeed, also perform this task of basement identification. National results for 1974 show that some 37 million Americans (13 years of age and over) did some voluntary work during the preceding twelve months; that 36 per cent of them did some volunteering each week; that some 15,455,000 Americans did some voluntary work during the week immediately prior to the conduct of this Action-sponsored Bureau of the Census survey; that, during the week, the average contribution for men amounted to about 10 hours, and, for women, to 8 hours. For the week on which the study focussed (April 7 through 13, 1974), the total amount of time spent in voluntary activities was about 137,000,000 hours. Hence, roughly 17,125,000 man-days.

A complete basement identification survey, with its postulated maximum of 581,203 man-days requirement, comes to 3.4 per cent of the Action study week's actual total.

Willingness to volunteer for civil defense activities is quite high, and has remained so over the years. We shall have an occasion to return to this issue, but it is easy to see that the initial task, that of identifying home basements, could also be absorbed by the national willingness to do voluntary work without any major difficulties.²⁵

In his three test groups, Christiansen reported that 38.2 per cent of the Interview Group respondents, 26.7 per cent of those in Group 1, and 30.0 per cent in Group 2 explicitly expressed willingness to serve as civil defense volunteer.²⁶

Since volunteers were, in fact, used as interviewers in the study, there is also some behavioral validation of importance available. In Woodland Park, Colorado, 16 potential volunteers were called, and 14 actually participated in the test; in Gunnison County, 11 of 32 people called accepted the invitation to participate; in Durango, 20 of 40 respondents who were called became actually involved.

"It is likely that a greater percentage of those who indicated their willingness to be volunteers would have attended the training session had not a major community activity been held on the same night."²⁷

Without attempting, at this time, to consider organizational program profile issues--to which we shall return--suffice it to say that the use of volunteers to perform activities required in this initial step of HBS planning is altogether feasible in terms of probable numbers of available and willing Americans.

But it may prove imprudent to tap the participatory reservoir of the nation on a task of such obvious simplicity and of such (relatively) short duration. Thus we may see whether the use of volunteers in the context of HBS planning might not be appropriate in other tasks as well, and this might make their use in the basement identification phase also desirable.

Thus far, we have spoken of actual field observations by public servants (police officers and/or firemen) or by citizen volunteers.

However, data on basic characteristics of homes are also available in secondary form in files of tax assessors and in the form of construction permits. Whether such available documentary data are easily accessible and whether relevant information can be acquired from them faster than may be the case in the few minute long requirement of observation in the field would have to be determined.

It may prove easier in some areas of the country than in others, and the approach needs to be flexible enough to allow the use of data acquisition methods which are most suitable to each respective area (municipality). Local civil defense directors would be in a position to choose between field and documentary sources, and the way in which the initial survey is to be carried out under their specific community conditions.

Furthermore, Community Shelter Plans have been started, as of 1974, in all but 268 of the 3,161 CSP areas--and in 1,844 of them the Emergency Information Readiness package resulting from the exercise has been printed and disseminated to the public (and in 82 such areas it was printed but not disseminated as of the 1974 report).²⁸

This means that responsible civil defense officials throughout most of the country already know rather well how large their shelter deficits are, and in which subareas the problems are particularly acute.

Hence, if priorities had to be assigned for want of funds or volunteer manpower to move in the direction of home basement sharing, it would seem that local (or otherwise appropriate) civil defense officials could target large deficit areas as higher priority, and complete basement identification surveys in smaller deficit areas thereafter (or, for that matter, not at all).

This applies to in-place as well as to relocated modes of sheltering. Where large shelter deficits may exist in host areas, the HBS planning would have a higher priority, while it might have a lower priority in host areas with not only large congregate care facilities (during relocation but short of hostilities) but with many public-type shelters, extant or upgradable.

In discussing the basement identification survey as the first major step in HBS planning, we are clearly focussing upon normalcy circumstances, and thus on NOP's. In a crisis situation, it would not seem desirable to break the planning process into such small steps at all, and we have no doubt that it would not be appropriate to first simply begin looking for basements and then undertaking the remaining major planning (and implementation) steps.

As we shall note briefly, COP's would have to combine several of the major steps, specifically, basement identification, assessment of basement suitability as shelter, determination of possible numbers of shelter spaces available, and resident commitments to be willing to shelter a specified (or self-delineated) numbers of others, neighbors or relocatees or both.

Yet, one possibility does exist even under crisis conditions: if, under appropriately mandated legislation for specific emergency

situations, the Bureau of the Census were authorized to release, to local authorities, lists of disaggregated data on structural characteristics of homes (in this instance, specifically whether there is a basement/cellar or not), the initial major step could be altogether avoided.

We do not consider this a likely possibility, however, and the time it would take to print out and nationally distribute appropriate lists (even if the data runs were pre-programmed, though not used, under normalcy) may well exceed what could be done, in a crisis, in each municipality of the country without such data.

Furthermore, it seems that actual detailed tabulations, in terms of basements, are not available even from the 1970 Census; or rather, they are not readily available. A footnote to Table B-2 (Housing Characteristics... op.cit. p. 1-456) shows that "the item was collected on a complete-count basis but tabulated on a 20 per cent sample basis." This means, of course, that raw data exist for the nation as a whole but that they are not in a form which could lead to the generating of reliable lists of addresses of residences with basements.

In any event, the following general observation is applicable: A less than perfect identification and location of basements might not be "elegant" but would be altogether acceptable since home basements would be expected to augment, rather than substitute for, the public (or larger) shelter resources, and, therefore, some undercount or some mistakes (as in identifying a home as having a basement while it does not have it) would not seriously affect an HBS program.

A summary of our operational conclusions is about as follows:

1. By determination of local civil defense officials along with other responsible community officials (Mayors, City Managers and the like), local police officers, provided with detailed street maps, can be used to assess, by direct observation, whether a given structure has a basement or not, with a focus on structures housing one to four households.

2. We estimate that between one and three man-days per officer might be involved in this activity.
3. The basement identification program can, under normalcy conditions, be extended over a period of two weeks, or even more as necessary (given the numbers of officers and numbers of structures).
4. Should the police officer force, available for this task over the more extended periods, be insufficient, members of the fire-fighting forces could be similarly enlisted.
5. Should police officers and firemen still be unable to complete the task within a specified time period and without affecting their performance of customary duties, volunteer citizens could be used to augment the survey force.
6. In some structures, it may be difficult to determine by direct and casual observation whether a basement is, or is not, present.
 - (a) A visit in such a home would help determine the facts
 - (b) Neighbors are likely to know whether people living next door have basements or not
 - (c) Tax assessment or construction permit records can be used for questionable cases
 - (d) Some dwellings may simply not end up in the final count.
7. The shelter deficit would initially dictate, for each location, the need for count accuracy.
8. Somewhat more precision will be needed in potential host areas for relocatees than in the nation's areas at risk (cities or SMSA's). This is further underscored by the fact that there will be, in general, more public shelter spaces in cities to begin with so that some basement identification inaccuracies in city areas will be, for sheltering purposes, less problematic than in host areas for likely relocatees.
9. Basement identification as a distinct step in the HBS planning process is compatible with normalcy periods but not with crisis situations. In crises, this step needs to be directly linked to phases of planning which lead to output (matching of guests and hosts) as fast as possible.

VII. BASEMENT SUITABILITY: NORMALCY CONDITIONS

The pool of the nation's private residences, whether in actual planning defined as consisting of one and two housing units, or including residences with three and four units (or even more), establishes the set of structures for the identification of those homes which have basements or cellars.

The Home Basement Identification Survey (HBIS) carried out somewhat along the lines postulated in the previous section of the report, defines the set of residences which are candidates for "sheltering."

The major planning phase we are to consider now aims at the determination of the suitability of particular basements as shelters.

We shall refer to this stage as one of Basement Suitability Analysis (BSA).

Under normalcy conditions, and thus in the context of NOP development, the identification survey, HBIS, and the suitability analysis phase, BAS, can be viewed as distinct and sequential stages of overall home basement sharing planning.

Under crisis conditions, we have already suggested that time constraints are, almost by definition, such that HBIS would not be carried out without its coupling with BAS and, in fact, with further major steps of the planning process, the discussion of which will follow in a subsequent section of the report.

"Suitability" of a basement as shelter has to do with some established minimum standard of protection. We will not speculate as to what such appropriate standards ought to be (40 PF or better? 20 PF or better?). Nor is it necessary that such a decision be made, by ourselves or DCPA, until the planning processes reaches the allocation phase in which choices must be made as to who is to be sheltered where--and therefore, with what most probable risks.

Nor shall we argue whether "suitability" of basements should be affected by consideration of the plausible protection that may be provided against primary weapons effects.

But it would seem logical that "suitability analysis" should incorporate the potential resource which some basements may amount to in giving some increment in safety against overpressure. Undoubtedly, it would be desirable to allocate the maximum numbers of shelterees in structures which can protect maximally against fallout and that can, at the same time, yield the best possible protection against blast effects. Since the main purpose of relocation, under crisis conditions, would be to move people from higher to lower risk areas, it may well be that the relocated posture could be based on plans which entail both lower fallout and blast protection standards than would be necessary in an in-place situation.

In any event, of course, one would start "packing" the best, and not the second or third best, shelters to begin with, and the key to an allocation strategy would be to provide shelter for those who otherwise might not have any (in public spaces, tunnels, mines and the like) and to reallocate, to private basements, people from least adequate public shelters first of all.

"One final point--the very best protection is really better than the next best. If a PF of 100 keeps most doses below 250 R, a PF of 1,000 will keep them below 25 R."²⁹

"Suitability," furthermore, may involve a whole basement or only a portion of it. In other words, the whole basement or cellar may exceed, in protectability, some desirable minimum standard or only a part of the basement may do so. In general, of course, "fall-out protection in home basements is least in the center of the basement and greatest in the corners along the walls."³⁰ If levels of relative blast protection are rated, if roughly, by letters of the alphabet from A (best protection, as in subway stations, tunnels, mines, and caves "with large volume relative to entrances") to I (fourth and higher floors of buildings with weak walls), most basements of wood-frame and brick-veneer residences rate an "E"--fifth from the "best," and fifth also above the "worst," I.³¹

Furthermore, suitability of basements for sheltering purposes can be increased, often by rather simple measures. For instance, bricks or concrete blocks between overhead joists (supported by a beam or jack column to take care of such possible extra weight) would increase the protection a basement can provide. Sandbags or earth piled up next to exposed walls and against whatever window spaces would also enhance the overall protection factor.

In simple terms, some basements may not meet desirable standards, but they can be upgraded with relative ease.

We do not think, however, that a great deal of structural upgrading would occur under normalcy conditions even when people are given the necessary information and the simple plans to act on it. And, quite obviously, little sandbagging or earthpiling can be expected under normalcy, even though a small segment of the population might be enticed to store a few bags of sand for such an eventuality--a very small segment of the population, indeed.

For these reasons, of course, upgradable basements cannot be readily incorporated into HBS-NOP's even if, during a crisis, some residents would undertake the necessary improvements. Such residents, however, ought to have access to information as to what they could do to improve their protection and, indeed, in the states in which Home Basement Surveys have already been carried out, such information was returned to home owners and renters whose basements fell below the desired standard.

Let us now consider how the desirable suitability analyses might be accomplished in the way of a national (or region after region, or state after state) program. Again, since the population posture cannot be assumed (whether in-place or relocated or, of course, some mix), BSA programs have to be such as to allow for the determination of basement protection in the whole country; and if time-phasing of such surveys seemed appropriate, higher priorities would again be attached to areas with larger shelter deficits than to locations with smaller deficits.

Furthermore: at least some time phasing of an overall effort would be desirable precisely because of the added flexibility and the potential of improving the data acquisition methods in light of antecedent experiences.

"We assume that the determination of actual adequacy of protection and of the numbers of people who could be sheltered presupposes the conduct of on-site home basement surveys.

Not only do we consider this to be an avenue to acquire data on potential contributions of home basement sharing to alleviation of shelter space shortages, but also a convenient and appropriate setting for the desirable face-to-face contact with the homeowner or renter to establish actual willingness to participate in the program." ³²

Direct visits to individual homes may remain the ideal way to carry out home basement suitability analysis. But it is also an expensive way: on the average, we would have to assume that, travel, contact and survey performance included, each observation might take 60 to 90 minutes.

With 26 million basements to survey, 26 to 39 million manhours or 3.25 to 4.875 million man-days would be required. Of course, it is imaginable, for instance, that each of 100,000 unemployed could have useful, and important employment for anything between five to ten weeks at an overall cost probably between \$100 and \$150 million (but with negligible tax returns unless this job were soon followed by employment, or reemployment, somewhere else).

Even a volunteer force of this magnitude is quite imaginable in view of the volunteering rates throughout the country and survey-established willingness of many to volunteer for civil defense activities. But the organization of the effort, the required training, supervision and control add further major complications.

Fortunately, faced with the Christiansen results from the Colorado Springs area, we no longer subscribe to the notion that the program "presupposes the conduct of on-site home basement surveys."

The Brigham Young researchers used the mails: first to send out information about the program, along with a brief questionnaire (Plan Sheet), and then a follow-up postcard to those who did not respond to begin with. This, in fact, was what Christiansen has called the Group 1 test in this program of studies.

Of the 2,117 sampled respondents (Woodland Park, Durango and Gunnison), 62 per cent eventually returned useable plan sheets, that is data which made it possible to determine the (a) suitability of the basement, (b) family plans in the event of nuclear disaster, (c) willingness to share with local and relocatee families (one, two and four families in all respectively), and (d) willingness to volunteer for civil defense effort.

In this Group (1), the residents were asked to rate the suitability of their own basement. In simple terms, they performed the basement suitability analysis themselves--and the compliance rate was 62 per cent (with 17 per cent having found that they had "suitable" basements).

In Group 2 (same research sites), an evaluation form was sent out initially. Here, the respondents were to provide simple data about their basement so that its suitability as shelter could be determined by civil defense officials. A follow-up letter, and then an additional follow-up postcard was sent to those who did not initially return the evaluation forms.

Plan Sheets (like those with Group 1) were sent subsequently (the assessment of basement suitability having been performed by local civil defense officials) along with follow-up communications.

Of the original 2,119 mailouts, 1,601 evaluation forms were returned (76 per cent) leading to the subsequent mailing of 1,360 Plan Sheets. Eventually, 734 useable plan sheets were returned to the researchers, representing 42 per cent of the 2,119 starter sample.³³

"Sending sufficient information to households so that they can self-compute their basement's suitability (Group 1 method) was found to be more effective and faster than assisting respondents to compute their basement's suitability through extensive mail interchange (Group 2 method)"³⁴

Thus,

"a version of the Group 1-type communication package should be refined for eventual employment and periodic use throughout the United States."³⁵

Furthermore, a follow-up study of those who did not respond (with 565 returns) indicated that (a) many people thought they had responded (22.5 per cent), (b) quite a few moved into, or from, the area since the beginning of the mailings (13.3 per cent), and (c) more than one in ten "misplaced or forgot" the material or, another one in ten, (d) "felt it did not apply."

Program-negative responses amount to less than 18 per cent as reasons for not replying to the several communications.³⁶

Given these results, we have reached the conclusion that the first subphase of the basement suitability analysis can be carried out by mail, using, indeed, improved or refined version of the Group 1 approach which the Brigham Young University researchers have themselves recommended.

In so far as we now assume that the basement identification survey will have been completed prior to an effort to assess suitability of basements as shelters, the mailouts which are postulated here would, of course, be sent only to residents (one, two, three and perhaps four family homes) whose housing includes a basement or cellar.

The Colorado Springs area experiments used an "initial message", a postcard, as an alerting device for the sampled residents of Woodland Park, Gunnison County, and the city of Durango.

We cannot be sure how the results would be affected by the absence of such an opening message; the Bureau of Census basement surveys do not provide a comparison (when an initial message was not used) because the eventual material was sent along with a letter from the Governor. If program funding made it possible, however, one conclusion would seem clear:

an "initial message" alerting residents to the idea that there will be a follow-up aimed at improving the protection of American families against nuclear hazards could not decrease the expected rates of return of eventual "plan sheets" (or such like documents) and it could well help increase it.

With slight modifications, the kind of message which was used in the Colorado Springs studies seems altogether applicable:

"Dear Fellow Citizen:

The X Community Shelter Plan is being revised and you are a vital part of it. You will soon receive a letter {and a brief questionnaire} in the mail from {Y and} this office. It will help us {to plan better} for emergencies if you read over the material and return the {simple} information asked for.

If you no longer live at the address on this card, please, call {Telephone number} and give us your correct mailing address.

Your cooperation will help the local Civil Defense Agency to better meet your needs {and it will help our whole country to better protect our people should it prove necessary}.

Signed."

{Z}

The modifications which we would tentatively suggest refer to parenthesized items.

We suggest that:

if Y in the above message is made equal to "The President and the Governor," "The Secretary of Defense and the Governor," or "The Governor"

return rates well in excess of the 60 plus per cent of the Colorado Springs can be predicted. The Bureau of Census surveys, accompanied by Governor's message, led to returns between 70 and 80 per cent.

An eventual message which would be also, in addition to the Governor, signed by the President would lead to returns of over 90 per cent.

If {Z}, in relation to the signature of the initial message, included not only the highest local government official (the Mayor, Town Manager, Chairman of County Commissioners--as was the case in the Colorado Springs studies) but also a signature of the local civil defense director, it would clearly tend to enhance the stature of the civil defense official and facilitate whatever subsequent communications would prove necessary or desirable.

NP

I VORMIES

TRATOR

/ BOLSEN

TOWN OF WOODLAND PARK

BEST VIEW OF PIKES PEAK

220 W. SOUTH AVE.
BOX 1858, WOODLAND PARK
COLORADO 80863

July 22, 1974

Dear Fellow Citizen:

The Teller County Community Shelter Plan is being revised, and we in Woodland Park are a vital part of it. We believe that:

- (1) families want to be together in times of trouble.
- (2) many home basements in Woodland Park can protect people better and more comfortably than public shelters.
- (3) families can protect their homes and property better if they are sheltered in or near their homes.
- (4) nearly all families are willing to share their homes voluntarily with other families in emergencies.
- (5) potential enemies have weapons which make our present civil defense system out-of-date.
- (6) a strong civil defense program can help deter nuclear war.

On the back of this letter is a form which helps you figure whether your home can protect you and others in a nuclear emergency. Information is also provided telling you what to do, depending on the protection your home provides.

Please figure how much protection your home offers. If you find your basement offers "Suitable" protection, you should use it in the event of an emergency. If your home is "Suitable" and others' in your neighborhood are not, we hope you will make arrangements to share your basement with those whose basements are "Unsuitable."

Please make your plans today for protecting your family. Then, let us know what those plans are by filling out and returning the enclosed form. By doing this, our local civil defense program can better meet your needs.

All information will be kept confidential.

Sincerely yours,

Glenn W. Bolsen
Town Administrator

km
Enclosures

HOME SHELTER TEST

TO FIND OUT YOUR BASEMENT RATING:

Choose which best describes your basement.

Then, compare what your rating means with what to do about it as explained on the next page.

CHOOSE WHICH OF THE FOLLOWING BEST DESCRIBES YOUR BASEMENT:

- | | |
|--|------------------|
| 1. Basement wall no more than 2 feet above ground on every side. | S rating |
| 2. Basement wall more than 2 feet above ground on any side. | MS rating |
| 3. Crawl space. | MS rating |
| 4. No basement. | U rating |

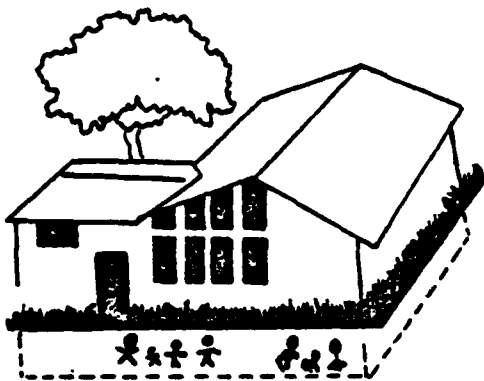
REMEMBER:

If you have a basement garage, your home has a U rating regardless.

IF YOU HAVE ANY QUESTION ABOUT YOUR BASEMENT RATING, CALL 687-2195.

FOR FURTHER INFORMATION AS TO WHAT TO DO IN EMERGENCIES, SEE THE BACK OF THIS BROCHURE.

WHAT YOUR RATING MEANS AND WHAT TO DO ABOUT IT



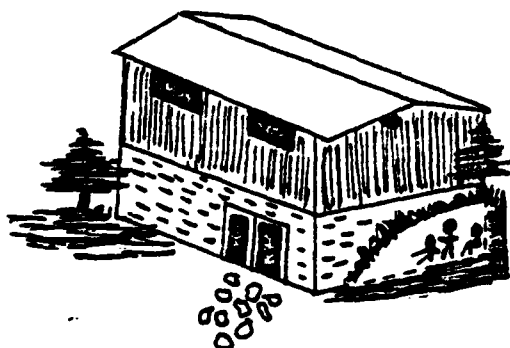
RATING (BASEMENT NO MORE THAN 2 FEET ABOVE GROUND ON EVERY SIDE)

What your rating means:

Your home basement is Suitable for sheltering you and others in a nuclear emergency.

What to do about it:

- 1) Stay in your basement in a nuclear emergency.
- 2) Invite families who live near you and do not have basements to share yours.
- 3) If you still have room, be prepared to share with people from Colorado Springs who may be relocated.



RATING (BASEMENT MORE THAN 2 FEET ABOVE GROUND ON ANY SIDE)

What your rating means:

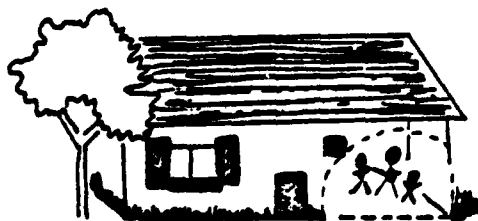
Your home basement is Marginally Suitable for nuclear emergency shelter. There are homes near you which have basements safer than yours.

What to do about it:

Choose the deepest corner of your basement and make a shelter for you and your family to use. Sandbag all basement windows and doors.

OR

Find a neighbor whose home has a basement all under ground. Arrange to share.



RATING

What your rating means:

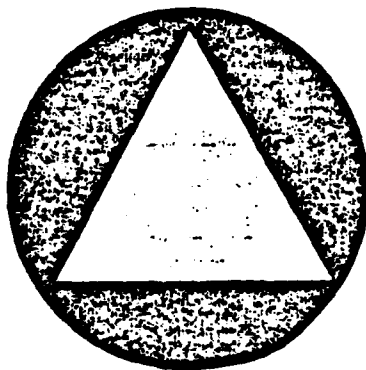
Your home is Unsatisfactory as a shelter for you and your family in a nuclear emergency.

What to do about it:

- 1) Find a neighbor whose home has a basement that is all under ground.
- 2) Arrange to share.

WHAT TO DO FIRST IN A NUCLEAR EMERGENCY

1. Send everyone to the basement.
2. Deposit supplies in center of basement.
3. Move all furniture, shop benches, and equipment to center of basement.
4. Have people sit along basement wall.
5. Organize an emergency team, who will:
 - (a) draw water in laundry tubs and other containers;
 - (b) shut off electric, gas, and water utilities; and
 - (c) prepare to suppress fires and rebuild fallout protection.
6. Provide pail or other toilet facility.
7. Plan to stay in your shelter for two weeks unless notified otherwise.
8. Listen to your radio or TV for further instructions.



Prepare to Share

PLEASE COMPLETE THIS FORM AND RETURN IT IN THE ATTACHED ENVELOPE

First, indicate what your basement rating is: (Check one)

☐...S rating
(Answer questions A-H)

☐...MS rating
(Answer questions F-H)

☐...U rating
(Answer questions F-H)

- A. IN WOODLAND PARK, EACH HOME BASEMENT CAN HOLD AND PROTECT AS MANY AS 12 FAMILIES (36 PEOPLE) IN A NUCLEAR CRISIS. BUT, THERE ARE ENOUGH BASEMENTS THAT EVERYONE IN WOODLAND PARK WILL BE PROTECTED IF EACH BASEMENT OWNER SHARES WITH ONE FAMILY.

Can we count on you to share with at least one family from Woodland Park?

☐...Yes

☐...No

- B. BECAUSE COLORADO SPRINGS IS A LIKELY TARGET, SOME PEOPLE FROM THERE MAY BE RELOCATED ELSEWHERE IN A NUCLEAR CRISIS.

Although it is not likely to happen, can we count on you to share with at least one relocated family from Colorado Springs in a nuclear crisis?

☐...Yes

☐...No

- C. Can we count on you to share with one family from Woodland Park and one family from Colorado Springs (two families), if it is necessary to save their lives?

☐...Yes

☐...No

- D. Have you already made arrangements to share your basement with other families from Woodland Park?

☐...Yes

☐...No

If "Yes," with how many families? _____ (Please write in number)

- E. Have you already made arrangements to share your basement with other families from Colorado Springs?

☐...Yes

☐...No

If "Yes," with how many families? _____ (Please write in number)

(CONTINUED ON BACK OF PAGE)

F. PLEASE INDICATE WHAT YOU PLAN TO DO IN A NUCLEAR EMERGENCY BY CHECKING ONE OF THE SIX BOXES BELOW.

1. ☐ ...I plan to go to a community shelter.
2. ☐ ...I plan to use my basement, but do not plan to share it.
3. ☐ ...I plan to use my basement and share it with at least one family from Woodland Park.
4. ☐ ...I plan to use my basement and share it with at least one family from Woodland Park and, if necessary, at least one family from Colorado Springs.
5. ☐ ...I plan to share my neighbor's basement.
6. ☐ ...I plan to do something other than listed above. (Please write in what you plan to do. _____)

G. CIVIL DEFENSE VOLUNTEERS ARE NEEDED IN WOODLAND PARK TO MAKE SURE THAT EVERYONE WILL BE PROTECTED IN CASE OF A NUCLEAR CRISIS. THESE VOLUNTEERS WOULD ATTEND A CIVIL DEFENSE TRAINING SESSION AND CONTACT PEOPLE IN THEIR NEIGHBORHOODS TO SEE THAT EVERYONE WILL BE IN AN "S RATED" BASEMENT OR PUBLIC SHELTER IN AN EMERGENCY.

☐ ...Yes

☐ ...No

H. NOW, WE NEED TO KNOW MORE ABOUT YOU AND OTHERS LIVING IN THIS AREA SO WE CAN MAKE BETTER CIVIL DEFENSE PLANS.

1. How many people, counting yourself, are currently living in your household?
_____ (Please write in number)
2. In which state does the head of the household claim residence?
_____ (Please write in name of state)
3. How many months of the year is your present residence occupied?
_____ (Please write in number of months)
4. What does the head of the house do for a living? Be specific. (For example, cement truck driver, bank teller, government typist, retired, etc.)
_____ (Please write in)
5. How many years of school has the head of the house completed?
_____ (Please write in)
6. What is the age of the head of the household?
_____ (Please write in)

PLEASE RETURN THIS FORM IN THE ATTACHED ENVELOPE

As a subsequent communication, the selected residents received a simple four page form, with a letter (signed by the individual who had signed the initial message) on the front page, elementary information "what to do in a nuclear emergency" on the last page, and a straight-forward guide in terms of which the residents should have been able to determine whether their basement, if they had one, was "suitable" as shelter, "marginally suitable" or "unsuitable" (in the absence of a basement).

An equally simple two-page "Plan Sheet" was also included. It is this document which was to have been returned in an attached envelope. Again: 62 per cent of these Plan Sheets were returned, and of non-respondents, only about 18 per cent cited reasons which were negative to the program and to the program concept either directly or by implication.

What of desirable refinements?

1. As we have implied previously, a basement suitability self-assessment form along with a plan sheet (a questionnaire with actionable items) would be ideally not only accompanied by a brief message from signatories of the "initial message" (where Z, it will be recalled, was the highest appropriate local official and the local civil defense director) but also by a letter signed by the President of the United States and the State's Governor, by the Secretary of Defense and the Governor, or by the Governor only.
2. The suitability self-assessment form can probably be greatly improved. The researchers, in this instance, used the simplest definition of sheltering suitability, that is "basement wall no more than two feet above ground on every side."

We see, however, no reason why the kind of instrument which was used by the Bureau of the Census could not be adapted to self-assessment if it were accompanied by a simple chart so that the residents can evaluate the result of their basement measurements. Some initial mistakes and crudities would not jeopardize the final planning outcome because, with added time and effort, probable mistakes could be corrected.

3. If an adapted Bureau of the Census form were used for more sophisticated protectability ratings, there is no reason why it could not

be sent out in two copies of which one would be returned along with the Plan Sheet questionnaire. This would combine the advantages of Group 1 method with the verifiability advantage of Group 2 (Colorado Springs area) method. As long as the resident would not be asked to copy the basement measurement information himself/herself, the return rate would not be adversely affected. Or rather, we cannot easily identify factors which would lead us to conclude that a lower rate of returns would result if data on basement characteristics were also to be sent back along with family plans of action under extreme emergencies.

4. The Plan Sheet, in light of the previous discussion, would also have to be modified and, in fact, it would need to be somewhat improved in any operational (rather than research) program.

The generic modifications, that is those which are unaffected by the nature of the self-assessment form, have to do with the following:

- A. "In {Community X}, each home basement can hold and protect as many as {Y} families ({Z} people) in a nuclear crisis. But there are quite a {few} basements that everyone in {Community X} will be protected if each basement owner shares with {a few other Americans} ."

{Statements in parentheses, {}, displace, in this proposal, the statements used by the B.Y.U. researchers}

- B. "THE AVERAGE AMERICAN FAMILY HAS ABOUT 3 (THREE) PEOPLE IN IT. HOW MANY FAMILIES (ROUGHLY THREE TIMES AS MANY PERSONS) COULD WE COUNT ON YOU TO SHARE YOUR BASEMENT {OR HOME} WITH IN A NUCLEAR CRISIS?"

Suggestion (B) displaces the several alternatives and the various mixes (local versus Colorado Springs families) which were built into the research design of the field-testing studies. In the research effort, it is quite essential, and desirable, to do what Christiansen and his colleagues did: we have learned something about one, two and four family sharing situations and about parallel mixes of local and city (relocated) families. In an operational program,

LETTER TO ACCOMPANY
QUESTIONNAIRE



STATE OF RHODE ISLAND & PROVIDENCE PLANTATIONS
EXECUTIVE CHAMBER
PROVIDENCE

John H. Chafee
Governor

Dear Fellow Rhode Islander:

The Department of Defense, Office of Civil Defense, in conjunction with the Census Bureau, has devised a method of determining what degree of protection against radioactive fallout is offered by a person's private home and what simple steps can be taken to improve that degree of protection in each individual situation.

The home shelter survey program, being conducted initially in Rhode Island, is an important extension of the National Fallout Shelter Survey that began in 1961 and has already located approximately 511,000 fallout shelter spaces in 534 facilities throughout the State.

Based upon the information you supply in the enclosed questionnaire, you will be informed of the fallout protection your home provides in case there ever should be a nuclear attack on our country, and what you can do to improve this protection for you and your family. I think it makes a lot of sense for each of us to have this information about our homes.

Would you please be good enough to fill in this questionnaire and return it by mail. There is no expense to you, and the information received is confidential.

Rhode Island is the first State in the Nation to have the benefits of this program. I do hope that you will take advantage of this opportunity. The objective is to help provide a safer place for you and your family. Your cooperation is certainly appreciated.

Sincerely yours,

John H. Chafee
John H. Chafee
Governor

FORM H-200
(11-12-66)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

EVALUATION OF FALLOUT PROTECTION IN HOMES

Dear Fellow Citizen:

The Bureau of the Census, acting as agent for the Department of Defense, Office of Civil Defense, is conducting a survey to determine how much protection from fallout radiation exists in homes. This is in accordance with the message the President gave to Congress in January 1965, in which he stated:

"It is already clear that without fallout shelter protection for our citizens, all defense weapons lose much of their effectiveness in saving lives.*** We will continue our existing programs and start a program to increase the total inventory of shelters through a survey of private homes and other small structures."

Please answer the questions on the inside of this form. Your replies will be held in strict confidence. All tabulations will be made by electronic computer and, on the basis of your answers, you will receive without cost an individual report on the amount of fallout protection now available in your home. The report you receive will be based on the best professional and scientific knowledge available on this subject. If the analysis shows you can improve the protective capabilities of your home, you will also receive a booklet describing how these improvements can be made.

For the survey to be completed and accurate, all households receiving this form should fill it in and return it to the Bureau of the Census. Thus, the form should be returned whether you are a renter or a homeowner, whether you live in a one-family home, a house with two or more families, or in an apartment building.

Please fill out your questionnaire and mail it promptly in the enclosed return envelope which requires no postage. Thank you for your cooperation.

Sincerely yours,

A. Ross Eckler

A. Ross Eckler
Director
Bureau of the Census


Enclosure

EVALUATION OF FALLOUT PROTECTION IN HOMES


Instructions: The questions below are about your home (house, flat, or apartment) and the building in which it is located. Please answer the questions as accurately as possible. Most answers can be made by placing a ✓ or X in the appropriate box.

1 ☐ No 2 ☐ Yes - SKIP TO ITEM 13

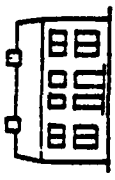
3 Which one of the following best describes this building?
(The example drawn for each choice may not show your house exactly; it is given only to describe the TYPE of building.)



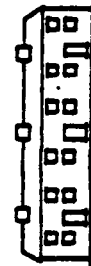
1 ☐ Single-family detached house




2 ☐ Two-family house, over and under duplex.




3 ☐ Two-family house, side by side duplex.



4 ☐ Row house, end unit.



5 ☐ Row house, inner or center unit.



6 ☐ Three-family house.

7 ☐ Apartment in a building with 4 or more apartments.

8 ☐ Trailer.

9 ☐ Other (Specify) _____

If you mark one of the last three choices, SKIP TO ITEM 13. OTHERWISE, CONTINUE WITH ITEM 3.

4 How many people usually live in your household (include yourself)?

1 <input type="checkbox"/> One	4 <input type="checkbox"/> Four	7 <input type="checkbox"/> Seven
2 <input type="checkbox"/> Two	5 <input type="checkbox"/> Five	8 <input type="checkbox"/> Eight
3 <input type="checkbox"/> Three	6 <input type="checkbox"/> Six	9 <input type="checkbox"/> Other (Specify) _____

5 How many floors are in this house? (Do not count basement or attic floors. If there is a basement, either full or partial, count only those floors above the basement.)

1 <input type="checkbox"/> One	2 <input type="checkbox"/> Two	3 <input type="checkbox"/> Three	4 <input type="checkbox"/> Four or more floors
--------------------------------	--------------------------------	----------------------------------	--

6 What type of roof does this house have?

1 <input type="checkbox"/> Wood or asphalt shingle	3 <input type="checkbox"/> Other or do not know
2 <input type="checkbox"/> Slate or clay tile	

7 Do you have a basement or cellar under this house?

1 <input type="checkbox"/> Yes - a full basement	3 <input type="checkbox"/> No basement - SKIP TO ITEM 13
2 <input type="checkbox"/> Yes - a partial basement	

8 What are the BASEMENT WALLS of this house made of?

1 <input type="checkbox"/> Cinder block	4 <input type="checkbox"/> Stone or brick	
2 <input type="checkbox"/> Concrete block	5 <input type="checkbox"/> Poured concrete	
3 <input type="checkbox"/> Cinder or concrete block, not sure which		
6 <input type="checkbox"/> Other or do not know		

QUESTIONS 9-12 ARE TO FIND OUT IF THIS HOUSE IS ATTACHED TO OR WITHIN 12 FEET OF ANOTHER HOUSE OR BUILDING AND, IF THERE IS A BASEMENT, HOW HIGH THE BASEMENT WALLS RISE ABOVE THE OUTSIDE GROUND LEVEL.

- In your answers, do not consider small buildings such as garages, car ports or sheds to be "another building."
- To identify left and right sides of your house, assume you are on the outside, facing the front door.
- Illustrations "b" through "e" on right below show some different shapes of basements. Small arrows show where the height above outside ground level of each basement wall should be measured or estimated, usually at the outside center of the wall. (See diagram "a")
- You may find it helpful to select a diagram on the right below which best shows the shape of your basement, write on the diagram the height of each basement wall above ground level, and then copy those figures into questions 9 through 12.

9 Is this home owned or being bought by you or anyone living with you?

1 <input type="checkbox"/> No	2 <input type="checkbox"/> Yes
-------------------------------	--------------------------------

ILLUSTRATIONS OF MEASURING POINTS

Measure the height above the outside ground of each basement wall.

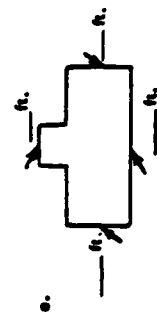
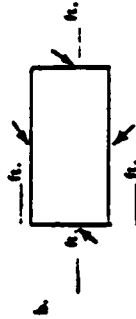


a. Side view

Measure height of basement wall here

Diagrams b, c, d, and e show overhead views of some typical basement shapes. Arrows show areas where measurements should be made.

OVERHEAD VIEWS



f. If your basement is shaped differently than above, draw its outline here.

8 Is the REAR of your house attached to or within 12 feet of another building?

1 ☐ Yes

2 ☐ No - If "No," about how many feet does the rear basement wall rise above the outside ground level?

0 ☐ Less than 1 ☐ 3 feet 6 ☐ 6 feet
1 ☐ 1 foot 4 ☐ 4 feet 7 ☐ More than 6 feet
1 ☐ 1 foot 5 ☐ 5 feet 6 feet
2 ☐ 2 feet above ground

10 Is the LEFT SIDE of your house attached to or within 12 feet of another building?

1 ☐ Yes

2 ☐ No - If "No," about how many feet does the left basement wall rise above the outside ground level?

0 ☐ Less than 1 ☐ 3 feet 6 ☐ 6 feet
1 ☐ 1 foot 4 ☐ 4 feet 7 ☐ More than 6 feet
1 ☐ 1 foot 5 ☐ 5 feet 6 feet
2 ☐ 2 feet above ground

11 Is the RIGHT SIDE of your house attached to or within 12 feet of another building?

1 ☐ Yes

2 ☐ No - If "No," about how many feet does the right basement wall rise above the outside ground level?

0 ☐ Less than 1 ☐ 3 feet 6 ☐ 6 feet
1 ☐ 1 foot 4 ☐ 4 feet 7 ☐ More than 6 feet
1 ☐ 1 foot 5 ☐ 5 feet 6 feet
2 ☐ 2 feet above ground

12 Is the FRONT of your house within 12 feet of another building?

1 ☐ Yes

2 ☐ No - If "No," about how many feet does the front basement wall rise above the outside ground level?

0 ☐ Less than 1 ☐ 3 feet 6 ☐ 6 feet
1 ☐ 1 foot 4 ☐ 4 feet 7 ☐ More than 6 feet
1 ☐ 1 foot 5 ☐ 5 feet 6 feet
2 ☐ 2 feet above ground

Please print:

13 Name of the head of this household:

we want to encourage, by the very nature of the instruments themselves (used, in part, as an educational tool and no longer as a research questionnaire), maximum willingness to share.

- C. We do not think it necessary to include a distinction between local and potential relocatee families. Data on basic willingness to share, and with approximately how many, would do in this phase of planning.

The main reasoning behind {C} above is somewhat as follows: if relocation does occur at all, and if it is carried out to (near) completion before the given crisis would result in warfare, city relocatees would be already staying in host communities for some hours, or even days. Fairly soon, most would cease to be the strangers they are when considered as an abstraction (e.g. Colorado Springs evacuees) and would be, with whatever reluctances, temporary members of the hosting community. To refuse shelter to abstract city dwellers is, in every respect, much easier (and more probable) than to be unwilling to help a family in need--wherein actual and known (or knowable) human beings are concerned.

Furthermore: we have already emphasized that sheltering in a crisis would exceed commitments to shelter which are made under normalcy situations. Whatever "slack," if any at all, in willingness to provide shelter for relocatees would be taken up, without any doubt whatsoever, by people who had initially said that they might not be able, or willing, to share with anyone.

To the extent to which crisis relocation planning will continue across the country, host area residents will be aware of it anyway, and it is inescapable that they would be, if dimly at best, also aware that guest families may need help in a variety of ways, of which sheltering is only one (and applicable only for the worst crisis outcome). There is, therefore, no particular reason to underscore what is only a minor, but in more abstract terms potentially threatening, difference between "locals" and "visitors" (relocatees).

- D. If a more sophisticated self-assessment form (e.g., adapted version of the Bureau of the Census form) were used, including some simple

chart which allows the conversion of basement characteristics into crude protection factors, it would seem highly desirable to include, in the refined form,

(a) information about approximate square footage of basement space that is unencumbered by appliances, storage space and the like.

(b) information, to be mapped onto simple basement plans (most typical examples of which are used in the Bureau of the Census document), of basement areas which are not "free" space.

We know, of course, that basement corners generally provide better protection than basement centers. It is also true that many basement corners may be taken up with appliances (heating equipment; washers and driers, and the like). Such natural constraints, indeed, have to be taken into account in actual NOP's (and COP's, in fact, as well) for home basement sharing.

Yet, upgrading again can go a long way toward making more of the given basement space available, and under crisis conditions, there is little doubt that the best available spaces, even if currently blocked in some manner, could be cleared for use.

E. A refined explanation of "confidentiality" provisions would be needed. American householders would have to be told that, while what they say remains confidential (within DCPA), the results will be used to consider allocating sharees in accordance with the resident's willingness, and in subsequent consultation with him/her. That, with the approval of the home-owner or renter, potential shelterees would be told which address to go to along with information about closest and best available public shelters.

The fieldwork to determine basement suitability is not more than a \$20 million package.

To send out approximately 26,283,000 postcards (initial message) amounts to about \$2,365,470 and, at bulk rates, to much less. To send out the self-assessment forms and Plan Sheets (questionnaires) at about 20¢ each amounts to about \$5,256,600. If returns are postage-free (prepaid envelopes), 90 per cent returns (with a letter including the signature of the President), the cost is about \$3,075,111; it is \$2,733,432 at the 80 per cent level, \$2,391,753 at the 70, and \$2,050,074 at the 60 per cent level of returns.

If follow-up letters were sent to all residents, each such follow-up mailing amounts to about \$3,416,790. If follow-up letters were mailed only to those known to have failed to respond (give or take even several thousands of mistakes in this regard), the cost is proportionately smaller.

The remaining costs within the broader \$20 million range include printing of the appropriate forms, address labels, return envelopes and the like.

Full organizational and manpower costs to monitor the process and to use the results have, however, not been estimated in this total.

Closure messages would also cost about \$3 million. In fact, our \$ amounts are probably overestimates. They assume no bulk rates, or other than first class mailings. As it is, we would venture a guess that a plan of this kind could be carried out at about an overall cost of \$25 to \$30 million including the already (partially) mandated costs of civil defense manpower.

We have suggested that, given one or two follow-up communications, the return rate is likely to be 60 per cent as a minimum (if only local officials sign accompanying communications) and over 90 per cent as maximum (if the President chooses to sign an accompanying message).

- (a) The returns with expressed willingness to share on the part of those with suitable basements might be enough to handle whatever shelter deficits under in-place, or in some instances even under relocated, conditions in a good number of locations (municipalities) around the country.
- (b) Shelter deficits may remain despite the numbers of families that could be sheltered as a result of the basement assessment survey (s).

It is only a money, time and manpower decision whether direct visits to those residents who had not responded should be made to determine basement suitability and willingness to participate: since most non-respondents either "forgot" to reply, or "moved in just recently" (while previous mailing had been going on), or actually "thought that they had replied" there is little risk that such added effort would not produce a good number of additional shelter spaces. And there is almost no risk that it would produce resentment or hostility of a magnitude, and organizational potential, which would weaken the overall program.

To the extent to which shelter deficits might remain despite home basement surveys (more plausible under the lower postulated return rate of 60 per cent or thereabouts, and more plausible under relocated than under in-place options), such direct visits to homeowners and renters who had not responded might be more necessary.

The facts, however, are simple:

(a) whether or not on-the-spot direct surveys would be desirable or necessary can be determined after the completion of the mail surveys and does not have to be decided ex ante

(b) plans for such direct visits, of course, need to be articulated but the same messages and the same "instruments" (basement assessment form and plan sheet form) could obviously be used.

(c) plans for such direct surveys may vary from location to location depending on the outcome of the mail process so that there is no assumption that exactly the same second phase, if any, of home basement suitability analysis would be called for in all parts of the country.

We may guess that between 10 and 20 per cent of all basements might have to be subjected to on-the-spot surveys. This is about 2.6 to 5.2 million basements in the whole country. Assuming about one hour for each observation, something of the order of 325,000 to 650,000 man-days would be required.

If volunteers were to carry out such surveys and if each volunteer were to perform basement suitability assessments in ten homes, the 32,500 volunteers represent 0.08 per cent of the 37,000,000 Americans who did voluntary work during the 12 months prior to the

volunteerism survey of 1974. Since, as the study revealed, each volunteer averaged about nine hours a week, it would not seem prohibitive that each such volunteer could, quite easily survey 10 homes.

The 65,000 volunteers for the 20 per cent direct survey requirement are, of course, 0.16 per cent of all 1974 national volunteers.

The task could, of course, be also handled by police officers and firemen, somewhat along the lines we envisaged for the conduct of the initial identification survey. If scheduled over a period of a few weeks, say four or thereabouts, the additional workload per officer or firefighter would be low.

We have, as it were, combined three major planning stages:

- * Determination of suitability of basements for sheltering
- * Determination of possible numbers of shelter spaces in each suitable basement
- * Determination of the resident's willingness to share.

Therefore, after we consider what can be done under crisis conditions, we will return to the issue of numbers of shelter spaces and to willingness to participate in only a more summary manner.

VIII. BASEMENT SUITABILITY: CRISIS CONDITIONS

What, if anything, could be accomplished in, say, 24 hours? Given (a) the favorable dispositions of Americans to home basement sharing, (b) actual experience with the predominance of helping behavior under peacetime disaster conditions, and (c) the state of the nation's communications technology quite a lot could be done in a very short period of time.

But 24 hours of effectively available time to act in a crisis is but the most extreme example. Most programs, including Crisis Relocation Planning, are predicated on the much more realistic estimate of a 72-hour lead-time.

Needless to say, much more can be done in 72 hours than can be accomplished in any period shorter than that. A 24-hour assumption may make some types of actions somewhat more difficult, including a significant effort to upgrade shelter spaces or to construct expedient shelters. In turn, such measures become much more plausible under the 3-day assumption, and considerable upgrading of potential shelters becomes quite possible as does the construction of significant numbers of expedient shelters in those locations of the nation where the need would be most pressing.

In 1,844 of the 3,161 Community Shelter Plan areas (58.3 per cent), Emergency Information Readiness packages were, as of June 1974, printed and distributed. The process has been continuing throughout the remaining (county-like) areas though, as of June 1974, it was not begun in 268 of them (8.5 per cent). Most of such non-starters turn out to be in Region 3 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee)--192 of the 268 programs not yet begun (71.6 per cent). They represent 26.0 per cent of the 737 designated CSP areas.

In other words, save for one civil defense region (in which shelter space deficits are relatively high and where there are also

relatively few basements to add to the overall resource), Community Shelter Plans exist or are nearing completion.

Yet, the fact that Community Shelter Plans have been printed and even distributed to the public in no way assures their availability to the nation's families under actual conditions of need. Many have never been scrutinized. Many have been thrown away. Many have been misplaced. We would not expect that more than 5 to 10 per cent of the nation's families in areas in which public distribution of EIR package has already occurred would be able to lay their hands on the information without considerable difficulty (and time delay).

We must, therefore, assume that it would be highly desirable if EIR packages were redistributed at the very beginning of a crisis which has the potential of escalating. It is not our purpose to define the criteria for deciding which of the many world crises would, at its initial outbreak, have the requisite characteristics of an event to which national readiness response would be necessary.

There is, however, no reason to think that readiness information packages could not be delivered by employees of the postal service (and if needed, rapidly augmented by members of the police department and the like) to each resident of a community over a period of not more than six hours.

It presupposes that adequate supplies of the packages would be available. And it, indeed, assumes that the postal service employees would work on an emergency basis at whatever hours of day or night might be required.

A home basement self-assessment form and the Plan Sheet (previously referred to in the context of normalcy planning) could obviously be included in the delivery along with information about available public shelter spaces.

Radio and television would, as an obvious public service, keep repeating messages that each family will receive an important package of information delivered to the home (or mail-box) and that acting on this information could mean a difference between life and death should the crisis "get out of hand." A 24-hour period, such as we assume for this fallback approach (and in the absence of prior normalcy plans),

would clearly not suffice for Plan Sheets to be returned (to local civil defense officials), for allocations of families to potential basement shelters to be made, and for any kind of individualized feedback.

People, however, could learn where they might find private shelter if those residents with identified suitable basements would place an appropriate sign (or several of them) in their window(s)!

Such a sign could, of course, be also included in the emergency information readiness package, perhaps making a provision on the sign itself for each willing resident to enter also the number of families (one, two, three...) they would be prepared to accommodate.

Elsewhere, we concluded:

"Though strong majorities still claim to be in favor, the idea of marking private homes as fallout shelters, and thus marking them visibly in a most specific manner, is far less acceptable than are all other dimensions of home basement sharing."³⁷

Nationally, some 17.1 per cent were "strongly in favor," and another 37.9 per cent "in favor" of having private homes "marked" as shelter; and those who did have basements (the sheltering suitability of which was, of course, not determined in the study), would "definitely" be willing to mark their own home in 28.8 per cent of instances, and "probably" so in 30.2 per cent of the cases.³⁸

The Brigham Young University data for the Colorado Springs area reveal higher receptivities to home marking than do the national results:

- * 86.7 per cent of the (interviewed) respondents agreed to commit themselves to place a decal on their window during emergencies to indicate that their home is a shelter for local families.
- * 67.5 per cent were willing to commit themselves to marking their home, during an emergency, with a decal that would indicate their willingness to shelter both local and relocated families.

We are, in fact, quite encouraged by this difference between our own national data and the Christiansen results.³⁹

In the national survey, we probed into knowledge about public shelters, including the knowledge of the meaning of the customary CD fallout shelter sign. The respondents were exposed to a picture of the usual sign.

It is rather clear that, thinking about "marking their own home" as fallout shelter conjured up visions of this particular sign, and our question, in fact, tended to reinforce it by asking about willingness to mark the home with a "large" sign.

The decals used in the Colorado Springs area research are both simpler and more attractive. They are also smaller. Nor do they refer in any specific manner, or by accustomed implication, to "fallout shelters."

Both decals, in austere red, white and blue have but a simple drawing of a house, of a tree, a small CD sign, and a brief message:

PREPARED TO SHARE, or

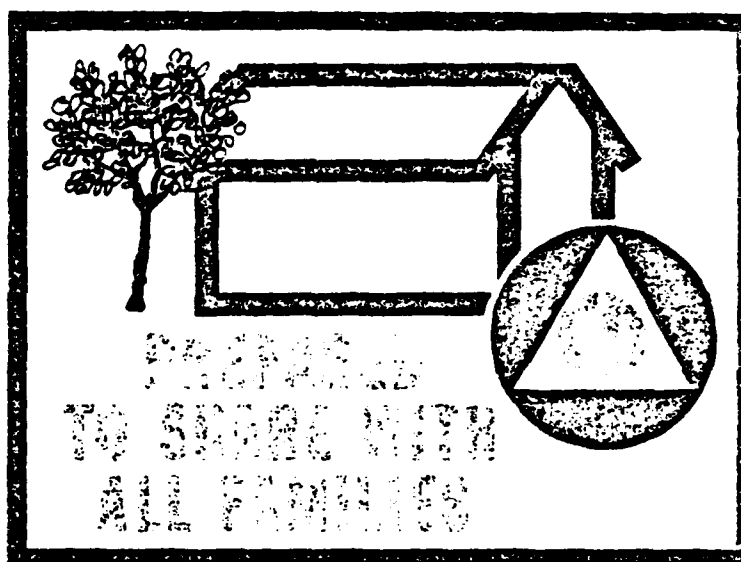
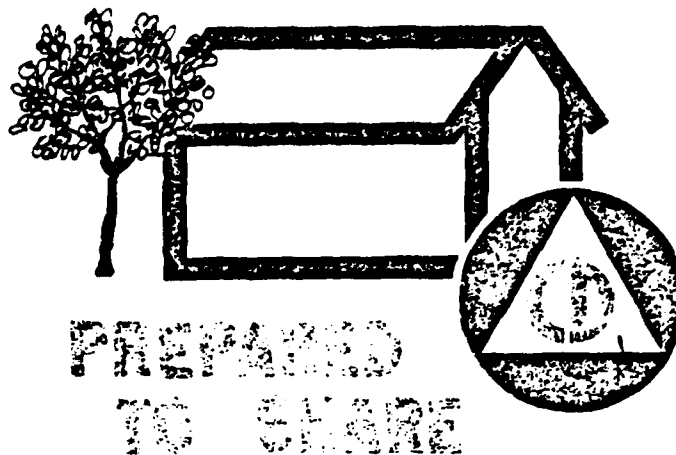
PREPARED TO SHARE WITH ALL FAMILIES.

Until proven otherwise, we believe to have compelling evidence that an esthetically more appealing sign with a straightforward human message would "perform" nationally somewhat as it did in the Colorado Springs studies, whereas a sign the respondents had reason to believe would be used which was implied in our own national study would underperform by 20 or 30 per cent.

This amounts to saying that a request for people with suitable basements who are willing to share to put an attractive small sign into their window(s) would be heeded by 66 to 90 per cent of those willing to share to begin with.

Even in less than 24 hours, the national shelter resource could thus be significantly augmented by inclusion of home basement sharing if procedures somewhat like those outlined here, were followed. People without basement protection would thus have information about available public shelters, and would become aware, by radio and television messages (along with appropriate explanations in the package to be disseminated), that they can count on being admitted to a home which displays the "PREPARED TO SHARE" type of sign.

Finally, it seems clear that a 24-hour crash plan could be further improved by preparing brief television, and perhaps, radio,



programs explaining the forms received and their use, encouraging people to share their resources with each other, and generally increasing public information level about ways of coping with whatever might happen.

Such a program would allow even those residents who for whatever reasons would not receive the information package, or would not get it in time, to make an assessment of their basement's suitability as shelter, or to make alternative sheltering plans. Those with basements and willing to share could quite easily be shown how to make a crude sign and post it in the window. A display of community maps with appropriate public shelter locations would facilitate movement to shelter, were one called for, for those residents who may not have the Community Shelter Plan on hand or at all. This, of course, is a fallback strategy within the fallback strategy but since it requires only some modest preplanning (of appropriate television and radio instructional programs), it could be easily carried out.

Obviously, crash program efforts of this type would assume in-place sheltering for the most part. This seems reasonable anyway: a decision to relocate would take some time, perhaps six to twelve hours even were the crisis quite acute; only little in the way of actual relocation would thus be expected to occur in the first 24 hours of a major crisis. Essentially then, the fallback approach for the 24-hour period is one for in-place options along with, perhaps, small flows of (spontaneous and organized) relocatees.

Let us assume now that the acute crisis would extend beyond the initial 24-hour period. What might be done in 48 hours or in 72 hours to improve the COP's?

The major operational weakness of the 24-hour crash program has to do with the fact that civil defense officials would not be in a position to know how many homes have made their basements available as shelters, for approximately how many people, and how would guests distribute themselves among the available host families.

For these reasons, we have assumed that the package of information delivered to residents would contain not only Community Shelter Plan data along with all other relevant emergency information, but also home basement self-assessment instrument, sharing decal(s) or signs, and Plan Sheets.

It will be recalled that these Plan Sheets are, in effect, questionnaires seeking to determine willingness to share a basement, with how many others and so on, or alternative plans of people without suitable basements.

Thus even as part of the 24-hour program, it would be desirable to ask residents not merely to evaluate their basement and share it, if suitable, but also to fill out and return the Plan Sheet. The latter step, of course, would be predicated on the continuation of the crisis beyond the first day.

Emergency mail pick-ups at all mail boxes could be arranged. Brief television and radio messages could inform the public by which time the Plan Sheet forms should be dropped in the nearest mail box. Arrangements could be made with the postal service for permitting pick-up and delivery to civil defense officials of these forms without postage, or even without their being placed in an envelope. Everyone would therefore have an opportunity to return it and at just about any time of day or night.

The filled out forms, in fact, could be back in the hands of the local civil defense director just by the end of the first 24-hour period. A typical scenario might run about as follows:

6 A.M. Decision to distribute Emergency Information
Readiness packages, home basement self-assessment forms, sharing signs or decals, Plan Sheets

By 8 A.M. The above materials in mail-trucks and en route for deliveries

By 3 P.M. All packages delivered: if needed, augmented personnel used

From 8 A.M. on:

Instructional messages on Television and radio; brief ones (30 seconds or so) every half-hour; programmed instructions how to be better prepared for a possible emergency perhaps every two hours or so (5 - 10 minute messages); a preplanned program to teach people how to use

forms received and what to do with them, for those with and those without basements, or without suitable ones perhaps 3 times repeated between 12 noon (by which time many deliveries will have been made) and 10 or 11 P.M.

After 3 P.M. First sharing signs will begin appearing in windows

From 6 P.M. Residents can be asked to deposit filled out forms in nearest mail-box, if needed, without postage stamp, without address, without envelope.

Residents encouraged to return their forms not later than, say, midnight (or some other such hour).

Explanation is simple: we have done what could possibly be done in the shortest time; but better planning to protect the public will be possible if such forms were returned.

Midnight
until
completion Pick up by emergency postal service crews of all forms from all mail boxes in the community

By 6 A.M. All returned forms can, by this time, be in the hands of the local civil defense director.

The Plan Sheet return aspects of the scenario, of course, would be inactivated should the crisis escalate into an impending attack situation. Instead, people would actually begin seeking shelter, both public and (marked for sharing) private.

Now much can be achieved in the subsequent 24 or 48 hours (assuming continued crisis but no cataclysm) to improve the community's civil defense posture.

The Community Plan Sheets would be sorted by geographic areas of the community: this process could be greatly facilitated if they were color-coded to begin with. Areas known to have higher deficits of public shelter spaces would receive the highest priority in an

effort to generate crude allocations of non-sheltered residents to willing homes.

If simple forms are prepared ahead of time, it would present few difficulties to have such information delivered to both guests (potential shelterees) and to hosts in specific and limited areas of a community half way or two-thirds of the way through the second crisis day.

This process would continue, area by area, until a complete plan will have evolved over a period that certainly need not take more than five, and might take (for many communities) as little as three, days.

A relocation decision, if one were to be made, would have occurred somewhere along this time axis. Since relocation itself has to be planned, civil defense officials in host areas would know approximately how many relocatees to expect and when they might be arriving: home basement sharing allocations would obviously begin incorporating the relocatee needs into the ongoing sharing program as soon as it were clear that relocation seems probable.

Relocation plans must involve congregate care facilities for all relocatees, even though many might find themselves welcome in private homes. Provisions of relocatee shelters must also be integral to relocation planning.

Thus home basement sharing, on condition of probable relocation, can again focus at allocating shelterees to private home basements dependent on the quality of public shelter available to them.

IX. BASEMENT SHELTER SPACES

Without upgrading by additional shielding (ceiling or walls or both), perhaps 70 to 75 per cent of basements might be suitable shelters with protection factor around 20 PF and more. Some 10 to 20 per cent of basements, without any improvements, might exceed PF of 40.

An average basement can be expected to have about 1,000 square feet of space.

Perhaps 70 to 80 per cent of Americans (with suitable basements) can be expected to share with one or more other families.

The notion of actually available sheltering spaces has, under any circumstances, two somewhat different dimensions. One has to do with required space for each shelterree. The other one concerns the willingness of Americans to provide shelter. The former issue has to do with something that may best be called the "packing factor." The latter circumscribes the "hosting factor."

The two "factors" can in no situation be assumed alike simply because they imply different standards of comfort, and different understanding, throughout the nation, of sheltering needs and the resultant survivability problems.

Shelter Space Analysis (HSSA) as a phase in the home basement sharing program involves an attempt to minimize the gap between "packing" and "hosting" factors in light of localized and situational needs for shelter which, in turn, reflect patterns of (public) shelter deficits and public preferences for public or private facilities.

At one extreme, "packing" may assume 10 square feet per person, a conventional limiting assumption for public shelters against nuclear hazards. Somewhere in between, there is an assumption of the need for about 40 square feet per person, a convention roughly equatable with peacetime disaster situations. Toward another extreme is a situation in which a suitable basement with 1,000 square feet of space, or some such number, would be used only by the resident and the household members--resulting, in effect, in some 300 square feet per person.

Still more extreme, of course, is a situation in which some suitable basements, each averaging some 1,000 square feet, might be empty altogether either because the residents were caught by a crisis while away from home, or because they chose to avail themselves of equivalent, or better, shelter elsewhere.

In so far as we have assumed throughout, and argued in favor of, voluntary participation in basement sharing, it seems clear that hosting rather than packing factors must be used in home basement sharing plans, at least as the initial iteration.

But since some effort may be made, and may need to be made, to increase the resulting hosting factor--in at least some communities in the nation--it is also self-evident that we must have information about the plausible maximum of basement shelterees, that is, the resource potential of basements if packing criteria were to be applied.

Precisely for these reasons, our concept for acquiring data about basement suitability via mail-outs provides for

- (a) obtaining a copy of a basement suitability self-assessment form
- (b) including, as an aspect of the form, simple information about basement size, and
- (c) information about basement areas, if any, with fixtures or else, areas which would not qualify as "free space" (or "feasible" space)

and at the same time,

- (d) obtaining an adapted Plan Sheet form
- (e) including information about willingness to share, and
- (f) numbers of families that the resident would be willing to share with.

A copy of the self-assessment form can serve to verify basement suitability by professionals, and lead to corrective feedback for those residents who may underestimate or overestimate the protectability of their basement, or why may use the self-assessment instructions improperly.

"Free space" in suitable basements will, of course, help to define the home basement resource in terms of realistic packing factors.

Information about sharing willingness and numbers of families acceptable as guests in an emergency helps to determine the realistic hosting factor.

Since detailed analysis, location by location, is necessarily required, we shall speculate about the implications only at the gross national level.

An in-place posture involves a total pool of slightly over 36,000,000 basements (Table 2). Using, as a rough parametric estimate the Colorado Springs area data, we find that useable Plan Sheets (and without doubt copies of self-assessments had they been asked for in this instance) were obtained, through the mails, from 62 per cent of the residents, and about 17 per cent of the basements so identified were suitable as shelters. This amounts, nation-wide, to about 3,794,400 "suitable basements" on the premise of mail procedures of the adapted Colorado Springs Group 1 type as we have described in the previous chapter.

A "packing factor" of 40 square feet per person, and an average basement of 1,000 square feet of free space (possibly something of an overestimate) implies about seven guest families and the host family per basement. Of the nation's 67,000,000 households, about 30,355,200 (45.5 per cent) could therefore be sheltered in suitable private structures--apart from the obvious and significant regional and local variation.

Of Colorado Springs area residents who were selected for direct contacts (in this instance, for interview purposes), 66 per cent were successfully contacted and interviewed.

If we assume that non-respondents to the mail-outs were to be scheduled for such direct contacts across the country, and if the successful contacts occurred at this 66 per cent rate, and if just about 17 per cent of basements were suitable as shelter, we come up with another 1,534,894 basements.

With eight families per basement (seven guest families and one host family), the "packing" assumption yields an additional sheltering for 12,279,152 families. This is about 18.4 of all households.

A mail approach followed up by direct contacts would then yield sheltering, in terms of packing factor of 40 square feet per person, for about 63.9 per cent of all the nation's households.

Throughout, we have assumed rates of mailout non-return of the Colorado Springs magnitudes--and this is a conservative assumption if the mailouts were accompanied by letters from the President and the Governor, or the several combinations previously suggested. And we have assumed direct contact rates of the Colorado Springs magnitudes.

Under these assumptions, of all 6,120,000 "suitable basements" (17 per cent of all), 5,329,294 (87.1 per cent) would have been successfully incorporated into the shelter resource of the nation.

Actually, we expect the mailout returns to be higher than 62 per cent. And we expect direct contacts to have higher success rate than 66 per cent (because, as opposed to research time requirements, the timing of such contacts would not be a constraint in a normalcy oriented planning process.

Under conditions of relocation, we find that the percentage of basements in non-SMSA areas of the country is about 26.1. This means that identical assumptions which we applied to in-place sheltering above (including the packing assumption), 16.7 per cent of households (rather than 63.9 per cent) could be sheltered in suitable private basements. How about hosting factors and their relationship to the postulated packing?

Mail-out results from the Colorado Springs experiments imply an average of 2.81 families per suitable basement (including host families and including basements used by the resident only, that is families unwilling to share).

In turn, direct contact results from these experiments imply an average of about 3.02 families per suitable basement.

Hence, in-place sheltering posture relative to hosting factor willingness would lead to an estimate of about 10,666,058 families sheltered on the basis of mail-out planning procedures, and an additional 4,637,164 families included given face-to-face follow-ups. Table 6 gives a summary.

Thus almost one in four American families could find a haven in suitable private basements if willingness to share is used as a standard, and if numbers of sharees are determined by the host family.

Table 6
SUMMARY OF PACKING AND HOSTING POSSIBILITIES
GIVEN SUITABLE BASEMENTS (17 PER CENT)
AND COLORADO SPRINGS AREA EXPERIMENT
RESULTS AS PARAMETERS

	In numbers and per cent of families			
	Packing (40 square feet per person)		Hosting (Expressed willingness)	
	Number	Per cent	Number	Per cent
Mail-based plans	30,355,200	45.5	10,666,058	16.0
Direct face-to-face follow-ups	12,279,152	18.4	4,637,164	7.0
<u>Total</u>	42,634,352	63.9	15,303,222	23.0
U.S. Total	66,699,084	100.0	66,699,084	100.0

About three in five families could be sheltered if 40 square feet per person were used as a criterion across the board, and willingness to share were not at issue, and numbers of shelterees were determined solely on the basis of shelter space. And finally: these results hold in this manner to the extent to which the Colorado Springs area experiments yield statistics which can be used as national parametric values to provide the necessary estimators.

Since there are about 26.1 per cent of basements outside of SMSA's a relocated posture simply means, under unmodified assumptions of this primitive model, that the results would be, in each instance, roughly .261 of the numbers or percentages obtained.

Furthermore, in this manner, we have effectively incorporated only 87.1 per cent of "suitable" basements into the system (leaving out those who have failed to respond to mail contacts were also not successfully contacted on a face-to-face basis).

Clearly, the relocated posture is more problematic from the vantage point of sheltering than is the in-place situation. Even so, about 6 per cent of all families could be sheltered abiding entirely by the willingness expressions and sharee-number preferences of host residents and if all SMSA's were evacuated. What, if any, flexibility might there be to make the hosting results look somewhat more like the packing ones?

1. Mail-out returns would be higher than those in Colorado Springs were the requests for information and program participation accompanied by a letter from the President and the Governor, the Secretary of Defense and the Governor, or the Governor.

2. Direct contact follow-ups can be higher (for those who even under the above circumstances might not respond to the mail-outs) because, in normalcy situations, time is not a critical constraining factor. Furthermore, such follow-ups with mail non-respondents do not run the risk of engendering hostility on the part of the residents, save for some exceptions, because the actual reasons for non-response rarely involve rejection of the program or program concepts, or rejection of civil defense in general.

3. In locations with sheltering needs not adequately met by the mix of public shelters and basement sharing participation, direct contacts with residents can increase overall willingness to share (if Group 1 methods produced an overall sharing willingness of about

81 per cent, the interview group {hence, direct contact} yielded willingness of 90.4 per cent (and even higher than that in the prior study in the city of Colorado Springs itself)].

4. We have already suggested that a distinction between "local" and (possibly) "relocated" families is both unnecessary and, from plan operations standpoint, undesirable. "Relocated" families, by the time of an actual crisis climax, would no longer be the "city strangers" they are when we talk about them in abstraction as "relocatees". They would become persons with names and faces, children, men and women who "by then" will have stayed in the host community and area for some days. Not using the differentiation between willingness to shelter "locals" as contrasted with "relocatees" will increase willingness to share and the numbers of sharees per willing program participant. This is clear because the data show a distinct and sharp difference between sharing with "locals" and "strangers," and the difference is an artifact of the research design--an important, and desirable feature of the research effort, but an unwanted burden on operational planning.

5. The data underestimate hosting. This, too, is an aspect of the research process and not an intrinsic property of the people involved. In other words, our own Colorado Springs area-grounded projections are highly conservative. The fact is, that residents who were asked to share with one family, for instance, were not asked whether they would also share with two, three, four families, or what their own assessed maximum might be. Necessary for experimental purposes would not be number-specific, but would provide alternatives along with a designation of an acceptable maximum of guests each willing resident might take in.

6. In a crisis situation, or in locations with remaining critical shelter deficits, direct contacts with residents willing to share with some given number of families (say, one additional family or two) to encourage them to share with at least one additional family beyond their initial expressed willingness would produce a significant number of shelter spaces in excess of the number estimable from the suitability assessment part of the planning process.

7. In an actual crisis, the realized willingness to share and the realized sharings would exceed whatever planning estimates result.

8. Numbers of basements with reasonable, though not desirable, protection factor may be far higher than the assumed 17 per cent. This is particularly so if it turns out that some host areas under relocation plans and in light of estimated fallout patterns may not require $PF \geq 40$, and $PF \geq 20$ would be altogether adequate (for such areas and locations within them). If, for instance, the relocated mode permitted us to determine that 40 per cent of basements would be suitable (for predicted local fallout) on the average, the results of Table 6 would be immediately multiplied by $40/17 = 2.35$, and so on. But only an analysis at the disaggregated level of localities and local needs can really shed light on this issue.

In any event, of course, we do not recommend that set packing factor value be applied to home basement sharing, whether the 40 square feet or 10 square feet types of standards. Rather, maximum free space resource numbers in suitable basements of willing program participants can be best used as a criterion to evaluate the overall effectiveness of the program, a maximum reachable shelter space allocation, but a number clearly not to be reached in a voluntary effort in which preferences of residents are the final determinant of participation rates and magnitudes.

Even so:

"While recognizing the consequences of severe overcrowding and inconveniences, nearly all (94.5 per cent) of the respondents still answered the following question affirmatively:

'If worst comes to worst, and if it were a matter of life and death, would you be willing to put as many in your basement as it will hold?'⁴⁰

The results are self-evident. The "gap" between basement packing and initially volunteered basement hosting could be bridged significantly, if not almost entirely.

X. WILLINGNESS TO SHARE: HOSTS

The thrust of our analysis has already forced us to consider program participation levels repeatedly. To that extent, we already know a great deal about sharing willingness. However, it may be useful to summarize the key points which have already been established and then to consider several additional ones.

1. We know, both from the Brigham Young University research in the Colorado Springs area and from the University of Pittsburgh national surveys, that levels of expressed willingness to share base-ments are high.

2. Furthermore, high levels of commitment can be attained by mail and these participation decisions can be further increased by face-to-face contacts.

3. Rates of return of mailed communications, and thus over-all numbers of willing program participants, are likely to be increased if the material were accompanied by a message from the President or the Secretary of Defense and, in each instance, the Governor. Actually, it is likely that not only would mail returns be higher, but the percentages of willing participants would also probably increase under such circumstances.

That such better returns seem likely is indicated by the consistently higher responses to the ICPA questionnaires sent by the Bureau of the Census (and with a letter from the Governor) than by the (high) return rate in the Colorado Springs area studies (with communications by local officials only).

4. Expressed commitments to share with local (or area, community, neighborhood) people are consistently higher than are commitments to share with relocatees from a city. In part, we suspect this result to be an artifact of the communications package used in the study, and of the research design need factors.

Yet, in part, we also think that there is a real difference even though it would prove not as large as that disclosed in the host

area study for Colorado Springs relocatees. Of course, even so the commitments to share with relocatees are high.

5. From the University of Pittsburgh national study of 1972 (Jiri Nehnevajsa, Perspectives on Home Basement Sharing, op.cit, esp. Table 11, pp. 38-39) we know that there are no significant differences in willingness to share among major segments of our population--that is, no important differences dependent on region, city size, sex, age, education, religious preference, race, political preference. Old respondents are somewhat less inclined to favor home basement sharing than are others, but this is hardly surprising.

6. When "life and death" rhetoric is used, as was the case in the Colorado Springs city research, willingness to share characterizes the responses of almost all residents (with suitable basements). This suggests that appropriate explanations of the criticality of the national need and of the importance of helping behavior coupled with emphasis on the "life and death" implications of decisions would lead to participation at beyond the 90 per cent level.

7. A comparison of the 1968 and 1972 national surveys, precisely because of a subtle, but important, difference in question wording, allows us to conclude that helping behavior in a crisis would occur in excess of what could be expected on the basis of normalcy oriented commitments. This means that actual sharing in a crisis will tend to be underestimated by most home basement sharing plans arrived at during normalcy periods.

8. Only very few people are likely to take the initiative to make arrangements with others to share. Thus willingness to participate in home basement sharing also implies willingness to accept shelterees who may be designated by local civil defense officials. Fortunately, data from the 1972 national survey bear this out: those willing to allow their basement to be used as shelter for other Americans are also willing, with minor exceptions; to accept shelteree assignment by civil defense officials. This result is further reinforced by the Colorado Springs area study by expressions of willingness to "list home as shelter for local {or relocated} families."⁴¹

What other factors, thus far not considered, might be relevant in affecting the nation's willingness to participate in a home basement

sharing program? Some are program-specific. Some, in turn, have to do with the relationship of the basement sharing program to overall civil defense plans and information about such plans.

We do not have enough evidence of any kind of possible types-of-people restrictions which may be occasionally involved. In other words, does willingness to share apply to all types of people and all types of families, or might there be serious limitations to it? For instance, some residents might be perfectly willing to share except with others of a different race, or of a significantly different socioeconomic status, or with families with very small children, and so on.

On the basis of the very limited data which bears on the issue, we do not think that the "type of people" matching presents a problem.

In hardly any instance did the respondents in the national survey (1968 as well as 1972) mention that they would share but ... In the Colorado Springs studies, the question of people mix in this manner also hardly ever arose. If there were strong feelings in this regard such that might affect the overall response patterns, there is little doubt that many respondents would have availed themselves of the opportunity to specify "people-type" restrictions. Hence, the largely negative, but far from conclusive, evidence leads to the conclusion that home basement sharing need not be predicated on resident-specified "exclusions" of certain types of sharers.

However, we would assume that the planning effort would make it possible, without encouraging it, for people to express important limitations of the "people-type" and that, in those relatively few instances in which such reactions would be obtained, shelter allocation could largely abide by such strictures.

Consider pets for a moment. There are many of them in the nation's homes and of many varieties, indeed. Would knowledge, on the part of potential hosts, that sharers might bring along their pet(s) affect participation levels? On balance, we think it would. Furthermore, the effects would be negative. Fortunately, we do not think the matter is difficult to deal with, but it is an important one. The sharers simply have to be strongly discouraged from even considering to take their pets along by an emphasis on appropriate guest-host relationships applicable to almost any social situation. Indeed, people

do not generally bring their dogs or cats when they go visiting, and multi-family social gatherings rarely, if ever indeed, include all the pets which may inhabit the homes of the assembled families.

The issue is, at the same time, an important one because the question about pets is likely to be asked somewhere in the nation in the course of basement sharing planning. There has to be a simple and straight-forward answer lest the issue become one of controversy or barbed humor or both. Such simple answers lie in the direction of emphasizing the proper norms which govern guest-host relationships in general, and reanalysis of hosting experiences during peacetime evacuations of our people can provide useful guidance in this regard.

The next major issue concerns provisions, especially food. Under in-place conditions, and in many locations, basement sharing might extend over a period of days, and some sharing might have to continue for two weeks, or possibly more. Under relocated conditions, sheltering of our people in basements may also necessitate a stay of several days, even if egress for a few hours might become possible fairly soon.

The question of provisions, in turn, has two dimensions to it. One concerns simply availability of essentials. The other, cost.

Many American families may not be able to support, with limited resources on hand, the required numbers of sharers for the probable time durations. Willingness to share, and especially willingness to share with enough others to make a major contribution to the sheltering posture of the nation might be impaired unless efforts are made to counter problems which would be anticipated as a consequence of food shortages.

It follows that sharers, as well as host families (and, for that matter, all families) need to be strongly encouraged to take along minimal necessary provisions, and thus, to have such provisions on hand or otherwise readily accessible.

Under normalcy, our people are unlikely to modify their existing stocking habits. We suggest that it is therefore not too probable that any educational campaign to insure the storage of essentials beyond what families do today would make much of a difference. Home basement sharing programs must therefore, we believe, be based on providing timely

information about what people ought to take with them, and this information will be well received, and adaptively acted upon, in a crisis.

Lists of items, such as those suggested by Chester, Cristy and Haaland (Strategic Considerations in Planning a Counterevacuation, Oak Ridge National Laboratory, December, 1975) seem applicable whether in-place sheltering or relocated sheltering would be called for. Of course, some of the items recommended (p. 75 of the report) may be more suited for the relocated than for the in-place option. Whether the right items are listed, whether alternative lists need to be considered, is a moot point for our purposes in this analysis. Rather, the importance of having a definitive message ready for times of need is at the crux of the matter.

Similarly, ready availability of such information on food (and water) as is exemplified by the United States Department of Agriculture Home and Garden Bulletin # 77 would prove essential.

If sharers were to bring most essential provisions with them, the problem of availability is significantly reduced, if not solved, as is the problem of associated cost burdens. Home basement sharing plans therefore need to be founded on the assumption that sharers would comply with recommendations to acquire life's necessities and to take them along with them to their hosting homes.

Many Americans, of course, have said that they would be willing to stock necessary survival supplies in their basements were such supplies made available by the Government: over 80 per cent of those with basements claim that they would do so.⁴²

Yet, the experience with stocking of public shelters has not been encouraging thus far. The limitations has been less that of a lack of security (resulting in considerable theft and vandalism) than of lacking financial resources to replenish the supplies after shelf-life expires or approaches expiration.

In simple terms, this amounts to saying that shelterees in public as well as private facilities, on an in-place as well as relocated basis, would have to be expected to acquire the necessary provisions by themselves. In this regard, the parameters of basement sharing planning do not differ from the overall problems of sheltering.

Occasionally, questions of liability, if not actually of liability insurance, may also arise. Once again: it is merely important that there be clear answers to such questions when, and if, they come up.

The simplest, and soundest, answer would, of course, be somewhat as follows: In a period of national emergency, you as a host of other American families would not be liable. The United States would absorb whatever eventual necessary cost might result should something happen to any of your basement sharing guests.

Finally, we think that a basically similar response applies to questions which may arise over accountability for damage which, in turn, sharers might occasion here and there.

Two major caveats have to be briefly addressed with regard to issues of willingness to participate in home basement sharing in the context of overall civil defense planning.

It may be quite correct to suggest that shelters in private basements may be more comfortable than public shelters. But the program would not be served well if emphasis is placed on the advantage of being able to "protect one's property" better by using private basements. This is obvious: not all homes have basements; not all basements are suitable as shelter. An appeal to "property protection" stands to leave out a majority of Americans. Furthermore, for residents with suitable basement, such appeals--in some instances--would tend to prove counterproductive: would one's "property" then not better be protected by not having strangers in the home?

Similarly problematic would be appeals which pit "private shelters" against "public" ones. Any implication that public shelters would be inferior as shelters is likely to damage home basement sharing programs rather than help them. We do not foresee a situation in which all Americans could be privately sheltered. If this is so, then appeals of the kind mentioned provide the grounds for controversy--who goes to the "better" private shelters and who goes to the "inferior" public shelters.

The key point is this: the home basement sharing program should not be oversold and does not have to be oversold. It must be viewed as an additional resource, as an augmentation of an overall national posture

to increase survivability of our people. In fact, the emphasis needs to be that private shelters can be as good as public shelters; and because many of them are as good, the country is seeking to tap this resource and make it part, and only part, of the national sheltering system.

Similar considerations apply to the possibility of overselling relocation, and the effects of such an information strategy upon credibility of civil defense in general. Technically, relocation seems entirely feasible. Socially, it may work in a time of need. But it cannot be construed as the only major option simply because it is not fully credible that relocation would ever be mandated, and if it were mandated by the President, that this decision would not occur too late in the life cycle of a crisis to make actual relocation then realizable.

Let us emphasize: the effect on home basement sharing of appeals which make "relocation" superior to "in-place" postures occur through changes in credibility, and these changes themselves have their likely genesis in the low likelihood of a relocation decision and the resulting mandate to relocate. Furthermore, the intersection of the two appeals, each of which is postulated to have negative impacts on home basement sharing willingness, would be altogether problematic: if private basements were "better" than public shelters, if "property were better protected" under such circumstances, and if, at the same time, millions of Americans were told that they would be relocated because relocation is better than staying in cities (rather than that relocation is an additional option), the appeals contradict each other. No relocatee, by definition, would remain in their own private shelter with its postulated "advantages" of comfort, property protection and the like.

In addition to issues which were raised throughout this paper, we have now identified several possible problem areas:

1. Questions concerning possible limitations on types of people (or families) the host residents would be willing to share with
2. Questions about pets of possible guest families
3. Questions concerning availability, and cost, of essential provisions, and food in particular

4. Questions of liability (of host to guests)
5. Questions of damage (by guests)
6. Questions concerning public appeals to induce higher participation which may, in fact, lead to lower participation.

None of the problems we have identified present insurmountable difficulties. The planner can easily counteract the possible negative effects of such factors. He needs to decide what answers to give when such issues arise. He needs to insure that such answers are thoughtful, simple and unambiguous. We have already outlined the major questions likely to arise, if only sporadically and only here and there. Specific sub-questions need to be posed, those which represent the most probable adaptations of the major questions, and policy decisions regarding answers need to be arrived at.

XI. WILLINGNESS TO SHARE: GUESTS

A successful program of home basement sharing involves, of course, not only willingness to participate on the part of potential hosts, families with suitable basements, but also participation on the part of prospective sharers.

Before we discuss the implications of "guesting" willingness for home basement sharing planning, four major dimensions of the issue should be briefly considered.

One has to do with expressions of willingness on the part of potential sharers. The second issue concerns preferences for private or public shelters. The third problem has to do with actual shelter plans which people may have, that is, decisions regarding actions likely to be taken in the event of an emergency. The last issue, in this connection, has to do with behavior in an emergency.

Willingness to go to someone else's home to seek shelter is high. The 1968 national study shows that 85.6 per cent of the respondents expressed themselves as willing (and 9.0 per cent as unwilling, with the remaining respondents unsure one way or another).⁴³

In Table 1, using data from the early 1960's, we already pointed out that roughly about half of the respondents may prefer public over private shelters. Another major clue about preferences can be obtained from the 1972 national survey. Respondents were asked to select the best (most preferred) way by which existing shelter deficits might be alleviated. They were also asked to identify the second best option. The results are summarized in Table 7.

The table again implies something of a 50-50 split, although public shelters are, of course, more preferred by respondents without basements. Actually, subjects without basements express a preference for basement sharing as a way to handle shelter deficits in only 23.9 per cent of the instances (first and second choices).

But this, as Table 8 shows may well be accounted for by the feeling of potential guests that home owners might not be all too

Table 7
PREFERENCES FOR WAYS TO DECREASE SHELTER DEFICIT

	Most preferred way		Next best way	
	Respondents		Respondents	
	With Basements	Without Basements	With Basements	Without Basements
Build new shelters	17.4	32.7	11.2	19.0
Modify, improve existing public buildings	35.8	36.8	26.8	32.8
Use private basements	24.4	10.7	28.0	14.8
Share private basements	14.1	8.9	22.4	14.0
	(553)	(749)	(553)	(749)

* Percentages in each column do not add up to 100. The subjects who said that "nothing at all" should be done and those who did not express a preference were included in the percentage base.

Source: This Table can be derived from Tables 9 and 5 in Nehnevajsa, Perspectives..op.cit.

Table 8
VIEWS ON ATTITUDES OF HOME OWNERS

Home owners are seen:	Respondents	
	With Basements	Without Basements
	(553)	(749)
Favoring sharing	44.7	39.8
Disfavoring sharing	29.7	34.6
Difference between favorable and unfavorable assessments of owner attitudes	+15.0	+ 5.2

too willing to share--while, in reality, home owners are quite willing to do so.

Whatever might be the effects of knowledge that home owners are willing to share, and such effects on willingness to participate as guest would, indeed, be positive, there is likely to remain a substantial cohort of Americans who would prefer to avail themselves of public rather than private shelters.

The Colorado Springs area data can give us some clues as to plans. A reanalysis of Christiansen's tabulations makes it possible to compare sheltering plans of residents in the three sampled areas. For the purposes of our analysis, Group 1 and Group 2 data from the Colorado Springs report are pooled. Table 9 gives the basic results: about half of the residents (Woodland Park, Gunnison County and Durango) who do not have suitable basements would go to a "community shelter." Hardly any respondents with suitable basements would do so.

The results are very important indeed. In addition to showing again that public shelters might be preferred over private ones by about 50 per cent of the populace (a percentage which knowledge of available private spaces would tend to decrease), the data show that people with basements which are suitable as shelters would not go to public shelters, thereby leaving their own shelter resource unused. Less than 3 percent might do so, and another percentage might go to a neighbor's house. This means that suitable basements would, in fact, be available as shelter at least to the residents and, in 78.0 per cent of the cases to others as well.

Somewhat more problematic is the result which shows that 28.7 per cent of residents without suitable basements might still plan to use them (13.1 per cent for themselves only, 15.6 per cent on a shared basis). We cannot tell from the data whether these were "marginally suitable" basements or really unsuitable ones. Home basement sharing planning would, of course, allow better self-assessment and better verification by local civil defense officials of the suitability assessment to make it possible to increase public understanding of sheltering.

As to what might actually happen in the course of a nuclear crisis, we do not have a very clear, or convincing, picture. It seems,

Table 9
SHELTERING PLANS OF COLORADO SPRINGS AREA RESIDENTS
(Groups 1 and 2)

	In per cent	
	Without suitable basement	With suitable basement
Go to a community shelter	47.8	2.6
Use own basement for own family only	13.1	15.6
Use own basement and share with locals	10.8	41.5
Use own basement and share with all	15.2	78.0
Go to neighbor's basement		
---	4.8	36.5
	11.9	0.7
	(1,681)	(301)

however, reasonable to conclude that almost all people with adequate basements would use their own basement as shelter, and most of them would share. It seems also reasonable to conclude that at least 50 per cent of those who do not have suitable basements would prefer private over public accommodations.

In our discussion of approaches to basement identification, to suitability analysis, to the determination of numbers of shelter spaces and willingness to provide shelter for others, we have not made provisions for systematic assessment of "guesting" willingness. We think that this is the right approach.

Instead of worrying a great deal about willingness, preferences, plans, and actual behavior under crisis conditions for those without suitable basements--not to speak of the costs of determining such parameters--we shall suggest that the nation's residents be given information both about closest and best public shelters as well as about nearby private homes to which they may go. We shall, at this time, assume that such information would be disseminated in the early phases of a crisis rather than beforehand, thus restating the need for in-crisis distribution of Community Shelter Plans (Emergency Information Readiness packages) augmented by resident-specific data on several alternative private home addresses to which they may consider going.

This raises questions about allocation of shelter spaces and about feedback. We shall, of course, be dealing with these issues in short order.

We were led to the conclusion (Table 6) that about 23 per cent of all households could be sheltered in private basements under the hosting willingness assumptions derived from the Colorado Springs studies.

If about 50 per cent of Americans without suitable basements were to go to public shelters rather than private ones, and this because of their expressed preference, the 15,303,222 families that can be sheltered under the "hosting" premise represent 49.9 per cent of all remaining households. Table 10 sums up these conclusions.

An entirely voluntary program which, in addition to its voluntary nature, is based on actual preference estimates of both potential hosts and potential sharers can thus accommodate 73 per cent

Table 10

POSSIBLE DISTRIBUTION OF NATION'S HOUSEHOLDS

All households	66,699,084
In public shelter due to preference	33,349,542
In private shelters, including hosts, and assuming a plan incorporating host preferences for numbers of sharers	15,303,222

of all the nation's households. And this comes about without the inclusion of any of the reinforcers (such as a Presidential message) or further intervention to enhance participation by both hosting and "guesting" families.

XII. BASEMENT SPACE ALLOCATION

We have now identified homes with basements; we have carried out suitability analysis by self-assessment and verified questionable self-rating results; we have determined basement "free space" (and thus we have knowledge of maximum packing that would be possible) as well as "numbers of families (or persons) with whom the resident is willing to share" (and thus we have knowledge of the hosting factor).

We have ignored, as an aspect of the planning process, the determination of "willingness to be hosted," that is, the willingness to participate in basement sharing as a guest. In this regard, we have assumed that families can be informed about availability of both public and some private shelters, and the decisions as to where to go will be dictated by preference for public or private sheltering (which seems to split the population just about in half), and by more specific situational factors related to the crisis circumstances themselves.

The planner thus has data on suitable basements; he knows which suitable basements are available as shelters for the resident family only (those unwilling to share) and which ones are available for others and for approximately how many others (in terms of "hosting" factor). Implicitly, therefore, the planner knows which households in a community require sheltering.

The planner also knows how many public shelters are available and where and how much protection each such shelter may provide and for how many people. This information, of course, is available as a consequence of the completion of Community Shelter Planning, the accomplishment of CSP.

Normalcy oriented planning (NOP's) under the in-place assumption now involves the allocation of families in need of shelter to available private basements given the hosting factor of the locality and of each potential host.

We think that the first major planning step involves capitalizing on the willingness of some residents to make their own sharing arrangements, and on their actually doing so.

1. Residents with suitable basements who have expressed their willingness to share (as part of the suitability assessment) would be contacted and asked

- (a) to make arrangements with neighbors to come to their home (basement) should the national need arise
- (b) to report such arrangements, on a post-card distributed along with the request, to local civil defense officials,
- (c) including names and addresses of persons with whom such arrangements may have been made, and
- (d) including a question whether an additional assignment of one, two... x - families could be made by civil defense officials if it were necessary.

2. Since many people would, of course, have no way of knowing which of their neighbors may also have suitable basements in which they may themselves remain sheltered, and which ones of them may have also expressed a willingness to share with others, such a message to suitable and willing "basement owners" would have to include a statement with something like the following message:

"All residents of this (City, municipality, community) who have basements which can serve as shelter in time of need and who have agreed to share it with others are being contacted the same as you. It is possible, therefore, that some of your neighbors have a basement which can be used as shelter, and that they, like yourself, agreed to share it. This means that some of them may contact you and invite you to share with them. Please, refuse. Tell them that your own basement is adequate and that you yourself participate in this program the same way they do. And that you are yourself contacting others who may be in need of shelter. Some people you may contact will also have suitable

basements, whether or not they have expressed a willingness to share. If this is so, explain to them that you are participating in the home basement sharing program, and that they, too, might prefer to use their own basement (if adequate) and share it with others."

3. A request for making arrangements with neighbors and reporting such arrangements to the local civil defense officials should be timed:

"Would you, please, report whatever arrangements you may make to us in the next (2 - 4) weeks on the attached postage-free postcard."

4. Follow-up phone calls or even direct home visits may be prudent in those areas within particular communities in which

- (a) public shelter deficits are larger than elsewhere
- (b) The return rate of arrangement postcards is particularly low.

What kinds of responses might we expect? Some, though very limited, evidence is available from the Colorado Springs studies.

In the City study, those respondents with basements reported having made arrangements to share in about 6.3 per cent of the instances (of the 749 respondents in the control group, of whom 718 responded to these items, 442 residents had basements).

In the Colorado Springs outlying area studies, 14.1 per cent of the respondents planned to share with locals, and of these respondents in the control group, 57 per cent claimed to have made some arrangements with neighbors. These 57 per cent, in turn, represent about 8 per cent of all control group respondents (N = 361).⁴⁴

In each instance, the control group respondents were simply asked a series of questions about their plans in a nuclear emergency, and whether or not they might share a basement if they had one. These control group subjects, therefore, establish the lower limit of spontaneous responsiveness to home basement sharing because they were provided none of the additional information, and encouragement, which the experimental groups were actually characterized by.

Table 11 is a summary of the relevant data for the experimental groups both in Colorado Springs City and in the potential hosting areas

Table 11
VOLUNTARY HOSTING ARRANGEMENTS: COLORADO SPRINGS

	Experimental Groups (Interviewed)	
	City	Hosting Areas
Willing to contact neighbors	78.4	83.3
Willing to report arrangements made	78.4	88.5
Actually returning post-card reporting arrangements:		
Of those willing to report	10.0	30.0
of all respondents	7.6	26.5
	(331)	(157)

* In each instance, the interview group included only those residents who had suitable basements to begin with.

included in the study. In each instance, these are respondents who were contacted directly (interviewed) so that we have no good estimate of response patterns to these types of probes had only the mails been used. But the estimates are quite useful.

The main point, of course, is this: we would be able to expect that between roughly 5 and 25 per cent of all residents with adequate basements who are willing to share with others would (a) make contacts with neighbors and (b) report the resulting arrangements to local civil defense officials.

This would amount to the entirely voluntary component of the home basement sharing program: voluntary self-assessment of basement suitability and reporting thereof; voluntary expression of willingness to share; voluntary expression of willingness to share with specific numbers of people or families; voluntary contacts with families that may need sheltering; voluntary reporting of arrangements made in this regard.

For the home basement sharing planner, this amounts to the simplification of the task by a factor of 4 to 20. But specific requirements are also implied in such results:

(a) The planner would want to delete from lists of families (or addresses) those which will have been reported as having arrangements with particular hosts.

(b) The planner would want to check voluntary arrangements against hosting willingness (reported as an aspect of the Plan Sheets accompanying self-assessment of basement reports) to determine whether some host basements may involve fewer actual arrangements than the host had stipulated in numbers of possible guests. This would mean that such residents could be contacted again whether or not they might be willing to also have families assigned to their home (the number of such assignments obviously dependent on the difference between expressed willingness to host and the arrangements which may have been made).

(c) The planner would identify basements in terms of "packing factor" which may remain highly unutilized as a result of the arrangements, so that possible further contact (of much lower priority than {b}above) could be made to insure sheltering for all families--a contact which would have to involve going "beyond" the expressed "hosting factor."

(d) The planner would discount all hosts and the pre-arranged guests from overall public sheltering needs, and thereby determine the implications of these initial arrangements for the Community Shelter Plan. In effect, the numbers of available public shelter spaces would now represent a substantially larger proportion of needed (population-based) shelter spaces, because some percentage of all inhabitants would use their basements (for themselves only), share their basements (with specified, and now reported, numbers of others).

(e) It is safe to assume that reported arrangements would reflect sharing willingness not only on the part of hosts but also on the part of the guests. Thus the total number of families involved in the resulting arrangements would represent a good approximation to lessened burden on public shelters (rather than the 50 per cent assumption regarding "preferences" for public versus private shelters).

(f) Prearrangements of this type are applicable to both in-place and relocated postures. They simply imply that relocated families would have more public shelter spaces available in localities of relocation (apart from further measures to place such families in private shelters as well), so that the overall pressure on public shelter would be decreased whether people would remain where they live or whether they would be relocated.

Now, of course, our gross estimates have still other implications:

1. Perhaps 95 to 75 per cent of residents with suitable basements and otherwise willing to share would
 - (a) not make arrangements with neighbors,
 - (b) or not report whatever arrangements they may have made
2. Some percentage of those who will have made, and reported, arrangements to share with specified others may fall short of their reported willingness to share in terms of guest numbers.
3. Almost all residents who will have made, and reported, arrangements to share will fall below numbers which "packing" may make possible.

In the city of Colorado Springs, over 94 per cent of the relevant residents reported that they would take in "as many people as possible" should this be a matter of life and death; in the Colorado Springs area, over 84 per cent of the respondents agreed to the same proposition. In other words, even the "packing factor" is not altogether limited by "hosting" number-preferences so that the planner, in dire need for additional spaces in particular subareas of each community, can have a good deal of assurance that many families would, in fact, accept "packing" rather than "hosting" as determinants of numbers of people in their basements.

Clearly, the highest priority for the planner consists of those residents who have not made sharing arrangements by themselves, or who failed to report such arrangements (75 to 95 per cent of all with suitable basements). There is no reason why the planner should assume that they are less willing to participate than they had expressed themselves to be initially. Rather, the making of arrangements calls for a great deal of rather complex initiative, and by far most people will not find it easy to fit arrangements for a seemingly unreal world of international conflict into their day-to-day normalcies and routines.

In other words, the planner can now begin to allocate non-sheltered families to those resident homes where there are suitable basements, willingness to share, but no prior reported arrangements to share.

1. Having taken into account Community Shelter Plans, area by area, and the results of sharing arrangements, the planner would identify those local subareas in which the shelter deficits remain the highest.

2. He would define each such subarea, with subarea-subarea overlaps, in terms of time/distance of movement: 15 minutes to get to shelter or equivalent distance? X minutes? Y minutes? We do not propose to recommend a viable definition because its characteristics must rest with a technical determination of warning and people-movement parameters--the latter being variable from location to location (due to topography and the like), the former having to do with warning technology and message delivery technology, but essentially a "constant" for the nation as a whole.

3. The planner would then begin allocations of non-sheltered families to private basements

- (a) using hosting factor as limit
- (b) area/time/distance as constraint
- (c) public shelter quality as criterion.

4. The use of "public shelter quality" as criterion, in turn, means something as follows:

- (a) First, allocate those families who are furthest removed from public shelter
- (b) Second, allocate families in shelters with lowest, even though adequate, PF to basements with highest PF: in general, quite clearly, basements with PF higher than the PF of nearby public shelters are better than the public shelters.
- (c) Third, alleviate planned--for "packing" in public shelters by allocation to home basements with PF of about the same magnitude as that of the respective public shelters.

5. The planner would be making such allocations on the basis of addresses of guest and host locations and not on the basis of "names" (of heads of households) even though the initial iteration would, of course, include names of the parties involved.

This would make the planned for allocations impervious to residential mobility patterns in that the program would rest with "residence" assigned to "residence," rather than "family" assigned to "family." The latter might be a preferred modality, but the need for almost annual up-dating (with some 25 per cent of national households changing addresses just about each year) would make the costs of planning and plan up-dating probably prohibitive.

6. The planner would iterate Community Shelter Plans in light of probable redistribution of shelterees, assuming that roughly 50 per cent of families might prefer public shelters even if private shelters were provided for them, or, more conservatively, assuming that between 25 and 50 per cent of such families might still prefer public over private shelters.

7. In areas of still-remaining deficits (in terms of shelter availability, now both private and public), the planner would contact

- (a) residents with suitable basements, willing to participate, who have not filled their self-expressed sheltering quota by making individual arrangements
- (b) residents with suitable basements, willing to participate, whose basements indicate the largest discrepancy between "hosting" and "packing" (at 40 square feet per person)
- (c) residents who may have been unwilling to share, though willing to use their own suitable basement.

8. Such follow-up contacts, in the order of priorities mentioned above, would certainly be most likely to lead to a successful minimization of remaining shelter deficits if they were made on a direct, face-to-face basis.

What might happen in the event of relocation?

The planner, of course, will know

- 1. Public shelters and public shelter spaces, both extant and upgradable, in potential host areas for relocatees.
- 2. Numbers of suitable home basements, willingness to participate, and numbers of families home owners with such basements will be willing to take in.
- 3. The numbers of persons the suitable basements can accommodate ("packing factor").
- 4. The numbers of sharings which will have resulted from entirely voluntary contacts, arrangements, and reports of such arrangements.
- 5. Approximate numbers of expected relocatees who would come into the host community, and where they would come from;
- 6. Where congregate care would be provided for them throughout the community (apart from sheltering distributions).

Actual home basement assignments then would almost depend on the situational factors. Hence, we think that there is no reasonable way to make home basement sharing assignments part of the plan if relocation is postulated. Rather, the planner would have to have detailed data sheets and maps which cover the information under points one through six above, and that actual home basement sharing allocations would take place as relocatees begin moving into the hosting areas.

Most hosting communities, by nature of the program, will be relatively small ones. Individualized contacts with potential host residents would not be numerically as difficult as would be the contacts in large metropolitan areas. Relocatees would be, to begin with, in concentrated locations. It would be clearly relatively easy to provide them with information as to shelter availabilities, as it would be to contact home owners or renters with suitable basements about the resulting allocations.

Some form of primitive registration of relocatees will prove a necessary aspect of relocation planning. Thus the planner will, in fact, know approximately, if not exactly, how many people have come to the host community (or area), what the family sizes and compositions are, and where they might be found in the initial congregate care system.

With the knowledge of available home basements, tentative allocations to private shelters can be made on relocatee registration and thus essentially on arrival. Here, differentiation among fallout risk areas (a priority which we have made explicit in the step-by-step strategy of assignment in the in-place posture) is less applicable: by definition, the risk in host areas will be smaller than in the evacuated areas (this being one of the reasons for relocation, apart from the primary weapons effects risks), the communities will be smaller so that an almost random assignment strategy (within the "hosting factor" limits) will prove applicable.

Furthermore, many relocated families, as part of relocation planning and of its implementation, may find haven in private homes to begin with. Even if we initially postulate congregate care entirely, many of the relocatees will be taken into private homes in the respective hosting communities.

Such families, without doubt, will use the same sheltering as will their hosts--in the host's basement, in a basement of another family with whom prearrangements exist, in a basement to which the host family was allocated as part of NOP's and on the in-place basis.

What about crisis planning?

We have already made it clear that a 24-hour crash program is feasible, but that it does not involve any systematic effort at private shelter assignment. Rather, the families in need of shelter, whether in-place or during incipient relocation (within 24-hours, only a fraction of all potential evacuees would be moved even were the relocation decision made rather early in the course of crisis events), would go to public shelter or to find marked (decal, flag) private homes willing to receive them on a "catch as catch-can" basis.

A more protracted crisis, and with crisis oriented planning, would permit the use of procedures pretty much as those specified here except for the provisions for voluntary arrangements to shelter others. The "assignment" modality, however, would be operative. Crisis planning under relocated conditions would be similarly handled--assuming that the identification of suitable basements and those willing to share them were done as we have specified in our discussion of this issue in Chapter IV of Part II of this report.

XIII. FEEDBACK: POTENTIAL HOSTS

The approach which we have taken leads to separating the nation's families into distinct subgroups.

- A. Those with basements constitute potential hosts.
- B. Those without basements constitute families in definite need of public or private shelter.

In turn, the potential host families can be differentiated into several further population segments:

A. 1

Those who have suitable basements, and

A. 1.1 willing to share

A. 1.2 unwilling (or unable) to share who, in turn, include

A. 1.2.1 people planning to use public shelters (perhaps 3 per cent of all)

A. 1.2.2 people planning to use their own basement but not share it (some 97 per cent of all).

A. 2

Those whose basements are not suitable as shelter.

Among them are

A. 2.1 families whose basements could be upgraded and become an adequate shelter, but, at the same time,

A. 2.1.1 some such families plan to use public shelter without any likely effort to upgrade their own basement and to use it

A. 2.1.2 some such families plan to use their basement and are likely to upgrade it

A. 2.1.3 some such families plan to use their basement without upgrading it.

A. 2.2 families whose basements could not be upgraded except at major cost or major structural change, and among these, there will be

A. 2.2.1 some families which plan to use public shelters or neighbor's basement

A. 2.2.2 some families which plan to use their own basement even though they really should not.

We have assumed that households with basements were identified as an aspect of the basement identification survey which we suggest can be done by visual inspection in most instances, and by simple direct contact in questionable cases.

We have assumed that basement suitability analysis will first be accomplished by mail, with at least two follow-up requests for the information, and, thereafter, followed-up further by direct contacts with residents in high priority areas (in turn, a function of shelter deficits and needs, community-wide and subarea-wide). Depending into which of the A. XXX categories the residents may fall, somewhat different initial feedback is indicated.

In each instance, however, the feedback message would be ideally accompanied by a letter from the initial signatories--the President and the Governor, the Secretary of Defense and the Governor, the Governor, the Mayor (or equivalent) and the local civil defense official. This, of course, amounts to a generic "thank you" note and does not address the more crucial issues of home basement sharing in its content.

An initial feedback message to group A. 1.1 (suitable basements and willing to share with known numbers of others) may substantively look somewhat like this:

"The information which you have provided us with shows that your basement would be a suitable shelter in the event of a nuclear emergency. On the basis of the copy of your Suitability Assessment Form which you sent us, our experts agree that your basement, in fact, would make a good shelter.

As _____ per cent of others in your community have done, you have also agreed to commit yourself to sharing your basement with other families in need. We are very grateful for your willingness to help in this important program, and, above all, to be willing to place your basement at the disposal of others whose life or death may depend on this.

We are now in the process of evaluating the overall results of Home Basement Sharing for our community. In the event of need, we would contact you to let you know who might be coming to your house for help. We may, however, be in touch with you before that. We may ask you to make arrangements with neighbors or friends to share your basement and to let us know about such arrangements.

If it also turns out to be absolutely necessary in that some families in our community would remain without adequate shelter, we may contact you also once more to ask whether you might not be willing to accommodate a few more people than the number you have already agreed to help. However, any further action we may take will be done with your approval and your help."

Now, as for people in group A. 1.2.1 (unwilling to use suitable basement either for themselves or others):

"{SAME INITIAL PARAGRAPH AS THAT FOR GROUP A. 1.1 ABOUT BASEMENT SUITABILITY}

Your response to us indicates that you might prefer to go to a public shelter or to share with a neighbor even though your basement provides good protection against nuclear hazards.

Of course, this must be your and your family's decision.

Yet, we would like to make you aware of the fact that if you use your own basement, we will be able to distribute both public and private shelter spaces

better. Every family that can help take care of itself makes it easier for us to make good provisions for the rest of Americans.

Should you, upon reconsideration, change your mind about using your own basement, and perhaps even the possibility of sharing it with others, would you, please, fill out the attached postage-free postcard and mail it to us."

An attached postcard would, of course, include an item about "having changed one's mind about going to shelter elsewhere" and about "willingness and/or ability to shelter others" and, if so, "how many others."

An initial feedback message to residents in group A. 1.2.2 (planning to use their own suitable basement but not share it) might include:

"[SAME INITIAL PARAGRAPH AS THAT FOR GROUP A. 1.1 ABOUT BASEMENT SUITABILITY]

Many people in our community have found it possible to consider sharing their basement with others. In fact, _____ per cent have done so.

There are many reasons for which people may be unwilling to share their basement, or for which it may be difficult, or impossible, to share their basement with others.

We are attaching a simple post-card. Should you now, or at any time in the future, feel that it might be possible for you to take in a family (or more than one family) in need of shelter into your home, would you, please, fill out the attached postage-free postcard and mail it back to us."

The attached postcard, of course, would allow for an expression of sharing willingness and for a statement of "hosting" numbers.

In each subgroup, we assume that information about appropriate behavior under crisis would be included in the feedback communication. It is not necessary for us to recommend the specific information package that should be used, or developed, in this regard.

Consider now families with upgradable basements. We do not believe that any such homes can be incorporated into the home basement sharing program. This, in large measure, is dictated by our conviction that basement upgradings will simply not occur in time or will not occur at all.

If effect, families of the A. 2.1 variety then need to receive a message somewhat as follows:

"On the basis of the information which you have given us, your basement cannot quite protect you, or possible families whom you might be willing to invite to share with you, under the standards which are required.

However, your basement has major possibilities to be used as shelter.

Attached, we are sending you a booklet (pamphlet) which will explain to you what you can do to make your basement more adequate as a shelter.

If you undertake the modifications which are called for, please, use your basement shelter for your family.

This will mean that you make it possible for other shelter spaces to be used for families who need them. By altering your basement to increase its protection factor against fallout, and by using it, you will help save another family because another shelter space which you would have to have without changing your basement can be used by another American family."

In fact, the planner should not expect to be able to incorporate any basements which require modification into the overall sheltering plan. In simple terms: people who have modifiable basements will not make the needed changes under normalcy conditions; the few of them that will make such changes, and have the materials which will enable them to make such changes, in an incipient crisis situation will not amount to numbers sufficient to worry about, or sufficient to provide a good deal of additional shelter.

Obviously, such residents would also receive an information package such as the "FALLOUT PROTECTION FOR ...HOMES WITH BASEMENTS"

(Department of Defense, Office of Civil Defense, January 1966, H-12)
so that efforts at basement upgrading can be maximally facilitated.

With regard to families in the A. 2.2 categories, the same basic message might be applicable to those who do not plan to use their basement as well as to those who do:

"Your basement, by your own determination and also confirmed by our experts, is not suitable as shelter without major modifications. Such modifications may be too costly to undertake.

However, an attached booklet provides you with information how your basement might be upgraded to shelter you and, possibly, your guest families.

If you have made plans to go to public shelters or to the home of a neighbor, you might be better off staying with such plans.

If you have planned to use your basement, you should reconsider your plans because your basement, without major changes, will not prove to be a suitable shelter.

You should either make the major modifications which may be required, or make plans to use public shelters as they are identified in the Community Shelter Plan, or to make arrangements with neighbors to share their basement if it is suitable as shelter.

In an emergency, you will be notified by us about public shelters which are nearest to your home, and about possible private homes in your neighborhood to which you may go."

Further contacts may be desirable with those residents who have suitable basements and who volunteered to share them.

This includes:

- (1) households in the A. 1.1 category (suitable basements and willing to share)
- (2) those in the A. 1.2.1 category (planning initially to go to public shelters or to neighbors' houses even though their basement, which they are not

willing or able to share, is suitable) who may change their mind as a result of the initial feedback and now express a willingness to share.

- (3) Those in the A. 1.2.2 category (planning to use their basement but unwilling/unable to share to begin with) who change their mind about sharing.

These, in fact, might be the households contacted to make pre-arrangements with neighbors:

"Your basement provides good shelter for your family. You have also said that you might be willing to share your basement with _____ other families.

Since every shelter space may make a difference between life and death for some Americans, we now ask you to (a) contact your neighbors and invite them to share your basement, and (b) to use the attached postcard to report such arrangements to us.

Some of your neighbors, whom you contact, may have suitable basements like you do.

Many have agreed to share their basement as you have done.

If you contact neighbors who have a basement in which they can stay or which they have been willing to share, please, do not stop there. Talk to other neighbors. Make arrangements to shelter as many people or families as you have told us you may be willing to take in. And, in fact, share with one or two more families than you had committed yourself to.

Remember, report the arrangements you make to us on the attached postage-free postcard within the next W-weeks.

We understand, of course, that you may not have the time to make the necessary arrangements. If we do not hear from you within W-weeks, we will assume that the civil defence office in {our community} can make assignments of families in need of help to your basement according to the numbers which you had specified.

In other words, if you cannot make arrangements with your friends and neighbors, or if you do not prefer to make them, we will help you by allocating families to your home."

The postulated postcard would, of course, only include space for the inclusion of names and addresses of those with whom sharing arrangements may have been made. We assume that residents who might respond to this contact by making sheltering arrangements and by reporting them would receive another "thank you" note--preferably with the highest level signatories possible.

Under the NOP assumption, and in-place posture, the following type of message may be the final one on the basis of actual allocations of shelter spaces:

- A. "We have now reviewed the shelter needs of our community and tried to use best public shelters as well as private home basements. You had agreed to help provide for not more than _____ families if this were really needed in an emergency.
- B. {As we asked you, you have made arrangements with _____ families by inviting them to take shelter in your home.}
- C. {We realize that the families you have already arranged with are all the families you can help. We are grateful to you for making these arrangements. In the country as a whole people like you have insured the survival of hundreds of thousands of friends and neighbors.}
- D. {The families you have already made arrangements with still make it possible for you to take in _____ families according to what you had told us yourself.}

We have now provisionally allocated residents of the following address(es) as guests in your home in the event of a nuclear emergency:

1. (ADDRESS/AND NAME)
2. (AS ABOVE), 3; 4; ...

We have made these assignments mainly on the basis of where people live. This makes your home close to theirs. And because we have allocated shelter spaces on address basis, if the present occupants of these residents move, the new residents will still be able to find help in your house.

E. The following families have been assigned to your residence:

1. (ADDRESS AND NAME), 2..., 3... and so on.

We have made these assignments on the basis where people live. This makes your home close to theirs. And because we have allocated shelter spaces on address basis, if the present occupants of these residences move, the new residents will still be able to find help in your house."

Basically, letters to respondents who made some pre-arrangements would consist of messages like those in paragraph A, B and C, or A, B and D, or A and D.

For residents involved in the program to whom actual assignments of sharer families will have been made, the overall message might include statements of the following kind:

"The families, whose addresses you have, that have been assigned to your home do not as yet know of this allocation.

They will be informed only in a crisis. You will, however, note that more families have been assigned to your home than the number you were willing to accept.

This is made necessary by the fact that some of these families may want to go to a public shelter; and because they may need more flexibility as to where to go. In time of crisis, they will be provided with information about nearby public shelters and about several private homes, including your own, to which to go.

If your own home becomes filled because some families arrive there early, please, tell others to follow their instructions and go to another shelter."

Finally, there may be a needed component about provisions and associated matters:

"Families that may come to your home for help will have information about essential provisions, especially food, that they are to take along. They can be expected to bring such items with them.

Your guests will be discouraged from taking any pets along, but it will be up to you whether this can be allowed or not should they do so anyway.

You will not be held liable while you have guests in your home during a national emergency. The United States Government will be responsible for any and all liability cost which could result if one of your guests had an accident while in your home. You will not have to finance damage which may occur to your home during an emergency. The United States Government will be responsible for damage which your home may suffer directly because of your willingness to host others."

In all, these are the basic types of feedback messages we envisage. Nothing here needs to be construed as suggesting that the proposed wording is in some sense "definitive" or even "best." Rather, it is the spirit of the messages which is important, and communications designed in the spirit of our suggestions would amount to an adequate, and desirable, information package of the feedback variety for the home basement sharing program hosts.

Under the relocation mode, a somewhat altered basic message may go to those to whom sharer assignments may have been made. In addition to the basic message already stipulated, the following kind of communication may prove appropriate:

"Under some circumstances, the President of the United States may feel that it would be best for the country if citizens of some of our cities were

relocated. Such crisis relocation plans exist. They assure us that people from cities which might be under the greatest risk in a possible nuclear confrontation could, in fact, be evacuated.

You happen to live in an area to which some of our people may have to be evacuated. Should this have to happen, please, disregard the listing of families/addresses who have been assigned to your home. It may prove necessary to assign some evacuated families to your home instead.

You would then, and only then, be informed about whom might come to your home: that is, if the President decided to evacuate some of our cities, or all of them, we would inform you about the changes this might make in who would come to your home for help."

Obviously, such messages would be appropriate in the potential host areas only, and it is a moot question whether such communications would be part of the normalcy oriented planning system feedback or whether they could be delayed for the onset of a crisis.

By and large, we lean toward the latter usage. That means, that "qualifier" messages, such as those about possible relocatee assignments, might well await the beginning of a crisis which seems to be likely to escalate, if not climax in an international conflagration.

XIV. FEEDBACK: POTENTIAL GUESTS

As part of the BSA (Basement Suitability Analysis) dimension of basement sharing programs, all residents with basements would have been contacted. Only some proportion of them will have basements with adequate fallout protection to begin with, and some others might be upgradeable though we have repeatedly asserted that such required alterations are unlikely to take place under normalcy conditions regardless of how much information and encouragement is provided. And, of course, many basements may be altogether inadequate as shelter.

In discussing the major components of feedback to "potential hosts", we have already assumed that all residents who would participate in the BSA program, including those not responding initially to the mail-out request but contacted directly in those areas of the country and in those subareas of communities where the shelter needs may be greatest, will have received a follow-up message.

We have made, thus far, no provisions to contact nearly half the population of households--people without basements. They, along with people with inadequate basement protection, constitute, of course, the potential sharing guests.

Because of high national residential mobility, we have also suggested that sharing allocations, that is the matching of shares and hosts, can therefore be best accomplished in relationship to addresses rather than in relation to specific persons living at the address at the time of program planning. Of course, initial hosting commitments must involve the particular residents of homes with suitable basements. But the shelter allocations, and the assignment of sharers (beyond the reported pre-arrangements by hosts) can still be grounded in address rather than being family-specific.

Such procedures will minimize the need for monitoring the hosting willingness of residents repeatedly and also making assignments changes as potential sharers move to another address.

The weakness, of course, is the following one: if surveys of potential sharers are not also carried out, as we now assume they would not be, the probable numbers of those who might go to public rather than private shelters may prove difficult to estimate, and the numbers of people in each potential sharer family will not be known, thus necessitating some approximations (in terms of "average household sizes" on a Census tract, or even enumeration district basis) in terms of "hosting factor." But surveys of potential sharers involve detailed surveys of the total population of the country, and it is doubtful whether the costs of such an effort would warrant the decrease in error which will result by making approximate guesses. Of course, should the Bureau of the Census be authorized by Congress to release, say 1980, family demographic data on an household by household basis to the Defense Civil Preparedness Agency for the sole and explicit purpose of aiding in home basement sharing planning.

We do not expect such a decision, however, if only due to the increased national, and of necessity Congressional, concern over problems of privacy and privacy violations.

Thus, on the whole, we assume

- (a) that no civil defense contacts with people without basements will have been made, and whatever they may know about basement sharing programs will be based on media information,
- (b) that assignments to share basements will approximate the "hosting factor" by using census tract or enumeration district household size averages as if they were applicable to each family in the area,
- (c) that assignments will be made on the basis of addresses rather than on family-name basis.

We have already emphasized that providing the public with detailed information as to appropriate coping actions in an emergency situation is useful but in an exceptionally limited way. We stressed the fact that information packages resulting from the Community Shelter

Planning program, if they are to have a beneficial effect on behavior in a crisis, will have to be reissued in the early phases of an emergency in which the plans may come to be activated. Short of such in-crisis communications, appropriate coping behavior is much less likely because people will not have bothered to read the material in normalcy situations and faced with routines of daily life, many who may have read it will have forgotten the content even as it applies to their own family, most will have misplaced the material and would have an exceptionally difficult time locating it when needed.

Our approach to HBS planning assumes, therefore, that information about public shelters and about appropriate coping behavior would be reissued in early phases of a crisis, and that such information would be augmented by material relevant to home basement sharing.

Specifically, a brief list of addresses (perhaps three to five) of host homes would be provided for each family or individual in need of shelter with a request that they contact the host family (or families):

"You now have information about best public shelters which are nearest to your place of residence and to your place of work.

However, we have also determined that many American families with basements which can protect people against fallout have expressed their willingness to share their private basement with others.

We are attaching a list of (three? five?) addresses of people who have been among the many who agreed to share their basement with others. These are addresses where you and your family members may find shelter.

Please, contact the first address and person on this list to see whether, in fact, you could join them in their home for sheltering.

This is important. It may be that the family which originally agreed to share their basement no longer lives there, and a new family may, perhaps, have a different preference. It may also be that the conditions of the basement have changed and that it is now used for some other purposes so that there would be no shelter space to speak of.

Please, check with each address successively until you find one from among those listed where you and your family will be welcome.

It is unlikely that none of the (three? five?) families on your list could help out. But if this should happen, please, contact the local civil defense office, telephone XXX-YYYY, immediately. We will provide you with some alternatives if they are available.

In any event, do not forget that you do now have information about public shelters and if you choose to go to a public shelter, there is no need to contact the families on your list of hosts."

An information package also needs to be developed which would cover relevant aspects of appropriate guest-host relationship. It would, as we have mentioned previously, discourage the sharers from including pets, and give cogent information on provisions which they ought to take along with them--whether they would use a public or a private shelter.

Potential host families, in addition to the feedback provisions which we have already outlined as an aspect of HBS planning itself, would also have to be informed. Clearly, like all other Americans, they would also receive information about public sheltering and about best coping behavior in an emergency.

They would, at the same time, need to know that their basement was assigned as shelter for families who might be contacting them. Our provision for generating lists of several host homes for each sharer rather than making one specific assignment for each sharer only may mean that the "hosting factor" (as numbers of families with whom the host is prepared to share) may be exceeded.

We think that this is for the better. Some hosts will, in fact, share with more families than they had initially stipulated. And, in any event, they will have an opportunity to tell guests who contact them that their basement is no longer available (because they already, on contact, agreed to share with the maximum number of families they can accept; or because the free space in the basement

has been reduced and they can take no families, or fewer families; or because they may have changed their mind about sharing).

Furthermore, the original residents who made a sharing commitment might no longer be living there so that, in a sense, a kind of "new decision" may have to be made by the current inhabitants.

Thus a message somewhat of the following kind may be indicated:

"Some time ago, we conducted a survey of private homes throughout the country to determine whether home basements would be suitable as shelter against nuclear hazards.

You may have participated in that survey. But it is possible that you have moved into your present residence after the home basement sharing program was completed.

In any event, your home basement was found to provide an adequate shelter against nuclear fallout.

You (or the family that had lived here at the time of our survey) also agreed to share your basement with _____ other families. We are sure that this decision of yours is still valid. Your help may make a difference between life and death for such families.

We have now mailed the address of your home to the following people:

1. _____
2. _____ etc.

You will note that your address was given to more families than you had agreed to take in. This is necessary to make our home basement sharing program as flexible as possible.

When you are contacted by your potential guests, please, make arrangements with them about coming to your home if the emergency makes this necessary.

After you have made such arrangements with the _____ families you have been willing to help, any others on this list who may contact you should be told by you that your basement is already filled up. They

will have been given several possible addresses to contact, so they will most probably call on someone else for help.

However, your basement has about _____ square feet of sheltering space. In peacetime disasters, about 40 square feet per person are assumed to be enough.

Therefore, your basement could actually take up to as many as _____ families (people).

We are not trying to convince you to take in more people than you had thought you could. But it is, of course, possible that with the information which we have given you, you may decide now to help as many, or close to as many, families as your basement can handle.

If this should be the case, please, make sheltering arrangements with as many of the families that contact you as you feel you can.

Remember: life or death may depend on the decisions our people make about helping each other.

Your guests have been informed that they should not bring along any pets, unless you would yourself clearly approve. They have also been informed what provisions, including food, they should take along.

The families that you agree to share with will come to your home only when warning is given that the United States is under attack."

Some adaptations of the message would, of course, be needed for those who may have made pre-arrangements with friends or neighbors.

A somewhat different message is required for people with suitable basements who plan to use them only for themselves, including an encouragement to share and to contact the local civil defense office to make the appropriate arrangements.

Under the relocation option, we assume that final private basement assignments would be made as part of the intake of relocatees. Thus appropriate information packages would be distributed during registration or in congregate care facilities, including addresses of host families.

The basis in-crisis message to shelter host families in relocatee host communities or areas would, of course, be somewhat adapted to the circumstance.

In fact, we also think that many relocatees would be housed in private homes in such host communities almost from the outset. Some of these homes will have suitable basements, and it seems only logical that families hosted during the crisis would also be sheltered in such homes should the crisis be resolved other than by peaceful means.

In turn, families hosted in homes without suitable basements or without basements at all would probably seek shelter, public or private, with the family hosting them during the crisis.

Apart from individualized feedback messages, we are naturally assuming that appropriate information packages would be designed for in-crisis use by television, radio and the printed media.

Such messages have to be designed for the two major civil defense postures (in-place and relocation) separately, and with the obvious understanding that the crisis period may be marked by a transition from an initially adopted option (in-place) to the alternative (relocation).

Except for the 24-hour crash program in which we move from basement suitability analysis (strictly by self-assessment) directly toward visible signs of willingness to host (by window decals or signs, flags, lights and the like) and actual flow of people in search of shelter (somewhat on a catch as catch can basis because of the crash-nature of the program and the acuteness of the situation necessitating it). Crisis Oriented Planning (COP) feedback to hosts and potential guests would proceed much along the lines we have indicated for NOP's.

Note that we assumed that if the acute crisis with its 24-hour basement sharing COP's would not escalate, the local civil defense officials would have, in their hands, Plan Sheets of residents with basements, and the sharing assignments could begin, and continue, immediately thereafter.

A 24-hour program is not compatible with relocation, except for fractional movement of city dwellers, both spontaneous and mandated (if a relocation decision were made before the expiration of the

24-hour period). But even in host communities and host areas for relocatees, the 24-hour COP's would lead to the detection of suitable basements, willingness to share, and approximate numbers of acceptable sharers.

If relocation were to occur thereafter, shelter assignments and flow of feedback messages to hosts and to local residents in need of shelter as well as to relocatees would follow the pattern outlined for NOP's in the relocated mode.

XV. NORMALCY ORIENTED PLANNING: AN OVERVIEW

Normalcy oriented planning implies a decision by the Defense Civil Preparedness Agency to attempt to incorporate as many private basements which are suitable as shelter into the overall national shelter system. It implies the carrying out of the planning, and the completion of plans, under conditions of an essentially peaceable, if tense, world.

In turn, the completion of plans in this regard includes the completion of assignments of sharers to host families, and the relevant feedback to that effect. This means that Community Shelter Plans, as they exist, are iterated in light of the inclusion of private basements, and that message packages, such as Emergency Information Readiness are modified to reflect the changed sheltering posture of the community.

Finally, our concept of NOP also involves the notion that the planning process is completed, or at least mostly completed, in a (major) crisis-free environment.

Basement Identification Survey

We separated the identification phase from other planning stages (evaluation of sheltering suitability of basements, sharing willingness and the like) to minimize cost and maximize flexibility.

- (a) Only about half of the homes across the nation have basements, so that more elaborate contacts necessary to assess suitability, willingness to share, etc. can be limited to this relevant subset of households.
- (b) Home basement identification surveys can be carried out, given the focus of this program phase, at very low direct costs.
- (c) The approaches which we stipulate as a simple way of determining homes with basements are characterized by lowest possible profile in terms of needs for

public communications, a feature we consider desirable to keep controversy, and its potential divisiveness, at an absolute minimum.

- (d) Maximum flexibility is built into the initial program phase because it does not establish in itself a commitment to a full scale planning effort. Rather, it facilitates reassessment of the desirability of further steps in the then extant world; and, in any case, it makes a hiatus between the planning phases possible should it be called for and thus in no way prejudices, or jeopardizes, other dimensions of home basement sharing planning.
- (e) Finally, flexibility exists with regard to eventual sheltering postures. This stage of the program is insensitive to the major option which might result on activation of readiness plans and is thus equally applicable to in-place and to relocated situations.

The program phase, as we see it, is a two-step affair. It includes visual, and thus entirely unobtrusive, determination of the presence or absence of basements in each home in each community. And, as a second component, it includes contacts of the face-to-face variety, or by phone, with residents in homes for which the basement identification cannot be done visually or for which the identification is questionable.

A. Visual Identification

In the absence of a major time constraint, a situation typical of NOP in general, we expect that visual identification of basements can be accomplished over some time by local police and local firemen without an additional significant burden on their existing duties.

Where this may prove difficult (because of the small size of police and fire-fighting forces relative to numbers of homes), volunteers can be used.

- (a) A simple recording form has to be developed to permit the entry of each relevant street address,

of the name of the resident (if easily visible or acquirable), and whether the home

- * definitely has a basement
- * probably has a basement
- * possibly has a basement
- * does not seem to have a basement.

(b) A training session of a few hours for the surveyors (policemen, firemen, and/or volunteers) would be needed

- * to explain the purpose of the HBIS
- * to explain procedures for visual identification of basements
- * to explain the use of the recording form.

If volunteers were needed, or if there were a preference for using them anyway, the local civil defense director would simply contact, by phone, as many residents as would yield the necessary number of volunteer commitments:

- (a) Any resident could be called to volunteer and thus there is no particular selection process involved;
- (b) We would expect 20 - 30 per cent of those contacted to actually offer their help, especially if the necessary training sessions could be held on several alternative days (on the premise that time-availability of any given person on any given day may be limited, while it is not so limited over several alternative days/nights).

In other words, we suggest that something like 500 telephone calls by the local office of civil defense would produce a pool of about 100 volunteers if training sessions were spread over a period of several days and each potential volunteer would be able to come on any one of those days. And we would expect 70 - 80 per cent of those who committed themselves on the phone as volunteers to actually show up.

B. Direct Contacts

Homes which "probably" or "possibly" have basements would be involved in the direct contact dimension of HBIS.

The surveyor populations are the same: policemen, firemen and/or volunteers. A simple form, once again, would be needed to allow entries of address, name of resident, and whether or not, in fact, there is a basement in the home.

Three possible sources of information are relevant in this regard:

1. A member of the resident's family responding to a surveyor visit.
2. A neighbor, who may know for sure that the home in question has a basement or may be less than sure, or may be certain that the home does not have a basement.
3. A builder (or anyone on the site) who is in the process of home construction would know whether the home will, or will not, have a basement.

Several call-back visits may be necessary for not-at-home residents.

In general, neighbors would be asked only if the initial contact fails because there is no one at home. Direct contacts would then be attempted for those residents whose neighbors are unsure whether or not they have basements.

Such occasional contacts with neighbors would also be used to verify the visual determination of whether or not they, themselves, have a basement.

Contacts with builders, or workers at home construction sites, have a self-evident objective: will the new homes have basements or not?

Furthermore, manpower or financial scarcities might necessitate varying priorities in carrying out HBIS. We have suggested that local program priorities would reflect the magnitudes of shelter deficits, including actual differences between public shelter spaces and shelter needs as well as possible improvements in shelter quality which may result by the incorporation of home basements.

Preparatory steps to conduct the HBIS involve the following measures:

1. Design of appropriate reporting forms for visual basement identifications.
2. Design of appropriate reporting forms for subsequent, as-needed, direct contact identifications.
3. Determination, by local civil defense officials, of community subareas with variable shelter deficits, and rough designation of resultant priorities for maximum effort HBIS.
4. Preparation of materials for a training session with firemen, policemen and, as needed or desirable, volunteers.
5. Contacts and agreements with police and fire departments to conduct HBIS, and decision on the approximate timing and duration of the (visual) survey.
6. Contacts with residents, by phone primarily, in those areas in which volunteer help may be needed.
7. Preparation of information releasable to the media about the program should questions arise.

In this phase of the home basement sharing planning program, we cannot identify any factors which would either endanger the effort or further facilitate it in a significant manner.

Some amount of error can be tolerated since it would not have major effects on the aggregate national home basement resource. The error sources, of course, are the following ones:

1. Mistaken identification of basements where there are none.
2. Mistaken reports of absences of basements where there actually are basements.
3. Impossibility to contact residents even after a number of attempted tries.
4. Impossibility to contact neighbors even after attempted tries.

5. Mistakes neighbors might make in saying that some homes have basements while they actually do not.
6. Mistakes neighbors might make in saying that some homes do not have basements while they actually have them.
7. Occasional mistakes in correct address and/or resident name reporting (visual survey).

Home Basement Suitability Analysis (HBSA)

In this segment of the home basement sharing program, we are concerned with the determination

- * whether basements are suitable as shelters or not relative to a DCPA agreed upon protection factor standard
- * whether basements which currently fall below the standard might not be upgradeable toward suitability as shelter, and what might be the required costs and structural changes of upgrading,
- * whether basements are not suitable as shelter at all, or upgradeable only at major costs or upon structural changes unlikely to be undertaken anyway.

A realistic home basement sharing program would, of course, be based only on homes which fall into the first of these three categories: where the basement is suitable as shelter, within the meaning of the protection criterion, without alteration (or possibly with such minor modifications that they would be highly likely to be done by the resident).

However, we do not want to limit HBSA to the suitability information only. Residents with basements have to be contacted somehow and once this is to be done, the additional information which is needed for planning purposes can obviously be obtained at the same time:

- * the overall size of the basement
- * the available "free space" along with approximate location of objects (such as heaters, driers, stoves, etc.)

and the like) which prevent the use of the whole basement as shelter

- * willingness to share expressions
- * numbers of families or persons with whom the resident is willing to share
- * whether or not any prearrangements to share may already exist with friends, neighbors or relatives and with whom.

The approach to BHSA which we have recommended seeks to minimize cost, maximize flexibility, and maximize program participation. And it maintains a low profile throughout.

- (a) Cost minimization results from the fact that direct contacts with residents are postulated only for those who may not respond to mailed requests even with follow-up reminders, and perhaps only in those communities of the nation, or even parts of communities, where shelter deficit may be high.
- (b) The completely voluntary nature of any participation in the program maximizes its flexibility for Americans as a whole.
- (c) The step-wise approach to BHSA maximizes flexibility for DCPA in that the suitability analysis can be stopped at any level of participation deemed tolerable (in relation to national policy and/or in terms of reduction in public shelter deficit or improvement in shelter quality).
- (d) Maximization of participation, other things being equal, is achieved by highest level of home based sharing program sponsorship (ideally, the President) made explicit to the nation's residents.

In all, we have suggested that BHSA be carried out in two major stages. One involves the use of the mails. The second one, direct contacts.

A. HBSA By Mail

All residents with identified basements, an output of HBIS, would receive

- * An initial message
- * The basic survey mailout
- * Up to two follow-up reminders.

The sending out of the initial message which amounts to announcing the program and informing the recipients that the survey package will be arriving in a few days is somewhat optional. It is, in our view, not a necessary component of the program and if cost considerations were serious, it could be dispensed with. Over the signature of the responsible local official and the local civil defense director, such an initial message would be accompanied by a letter signed by the President and the Governor, the Secretary of Defense and the Governor, or the Governor only.

The actual basic survey package would contain:

1. Two copies of a basement suitability Self-Assessment Form which can be an adapted version of the form used on behalf of DCPA by the Bureau of the Census in the home basement survey program.
2. A Plan Sheet, which can be an adapted version of the "questionnaire" developed, and used, by the Brigham Young University researchers in the field testing studies in the Colorado Springs area.
3. A message, signed by the highest local official and the local civil defense director, explaining the program to each recipient of the package.
4. An accompanying letter signed by the President and the Governor, the Secretary of Defense and the Governor, or the Governor only encouraging participation and stressing national, and state, importance of the program and our people's involvement in it.
5. A postage-paid return envelope, addressed to the local civil defense director, in which one copy of the Self-Assessment Form and the filled-out Plan Sheet are to be placed by the resident and mailed back.

The key adaptations of the Bureau of the Census form (which, to recall, was not of the Self-Assessment variety but of reporting-for-assessment type) involve the following:

- (a) A simple chart should be included which makes it possible for the home owner or renter to determine protection factor of the basement, at least in gross terms, or possible suitability of a part of the basement (usually, a corner).
- (b) The Self-Assessment Form, in its adapted version, would make provisions for identifying the size dimensions of the basement even if crudely so.
- (c) The Form would ask the recipient to make a simple drawing of the basement (or use typical drawings included in the Form, as had been done in the DCPA-Bureau of the Census form) including whatever fixtures may exist, and identifying the "free space" or easily "freeable space" in the basement (that is, subareas without fixtures and those not used for storage of items that it would be very difficult to move in time of need).

The major adaptations of the Plan Sheet, using the Brigham Young University instrument as a point of departure, would involve:

- (a) Asking how many others, if any at all, the resident might be willing to share with and not differentiating between "locals" and possible "relocatees";
- (b) Determining whether, if it were necessary as a matter of life or death, the resident might be willing to share with as many people as the basement might shelter as contrasted with the preferred maximum number of guests;
- (c) Asking about any possible restrictions on sharing which the resident may want to convey to the planners.

We envisage two follow-up messages, each time including the survey package as well on the likely chance that the initial mailing

was misplaced. Such follow-ups would be mailed approximately one month apart--the first one, therefore, about one month after the initial mailing since survey experience with mail-outs shows that just about all of the eventual original returns would be "in" within two to three weeks after the mailing.

B. Direct Contacts Survey

Face-to-face contacts are postulated with residents who might fail to respond to the mail-out HBSA and to the two follow-ups. Since the evidence indicates that by far most non-respondents fail to act not because of unwillingness or opposition to the program but rather due to other factors, such direct contacts would not create particular problems of any kind save only for the 10 or so per cent of those who are ideologically disposed to disfavor civil defense, national defense measures, or otherwise do not wish to be bothered in responding to questionnaires, requests and the like.

We envisage that these visits to non-responding homes would be carried out by (a) civil defense employees, (b) policemen, (c) firemen, and, as needed, (d) volunteers.

The same information gathering package would be used (two copies of Self-Assessment Form, one to be left with the resident and one taken along by the visitor, the Plan Sheet, and accompanying message explaining the program and encouraging participation) as in the mail-out dimension of HBSA.

1. If budgetary or manpower limitations make direct contacts of all "non-respondents" impossible, priorities would again reflect patterns of public shelter deficits.
2. Since relocatee sheltering may present particular sheltering problems in areas of relocation, it would prove prudent to maximize direct contacts with mail-out non-respondents in host communities so designated as an aspect of Crisis Relocation Planning.

Preparatory steps for the mail-out aspect of HBSA include:

1. Development of appropriate initial messages, of a message to accompany the survey mail-out, and of messages to accompany the first and second follow-ups.
2. Design of an appropriate Self-Assessment Form.
3. Development and design of an appropriate "key" which would make it possible for the residents to estimate the protection which their basement, or part of it, provides.
4. Design of the adapted Plan Sheet.
5. Arrangements with the White House or with the Office of the Secretary of Defense for their willingness to co-sign (with the State's Governor) the initial message and/or a message accompanying the survey mail-out.
6. Arrangements with the Governors to co-sign (with the President or the Secretary of Defense) or to sign (by themselves only) the initial message and/or a message accompanying the survey mail-out.
7. Arrangements with the highest local official to sign an initial message, and to sign a message accompanying the survey package and the follow-up requests.

The key preparatory steps for the direct contact phase of HBSA include:

1. Arrangements with police and/or fire departments to conduct the follow-up face-to-face basement suitability assessment and to obtain information for the Plan Sheet,
2. Telephone contacts with residents to identify volunteers, if needed, to carry out the direct contact HBSA.
3. Preparation of a training session for those who will conduct the direct contact surveys (police-men, firemen, civil defense employees, volunteers) so that they can conduct the necessary (basement)

measurements and fill out the "Self-Assessment Form," make an on-the-spot determination of basement suitability and so inform the resident and to fill out the Plan Sheet in the way of an interview.

Quite generic to the conduct of the whole HBSA are some major policy-decisions which will affect program profile, its credibility, and actual participation patterns.

1. There must be a simple and straight-forward way of explaining the program, including its relationship to public sheltering, to the national defense posture, and to the nation's general foreign policy.
2. Questions about appropriate guest-host relationship in the sharing mode must be answerable, including issues of mutual obligations and social propriety.
3. Questions regarding pets, raised by possible hosts and/or by the media, need to be answered, especially in the context of the guest-host role-set.
4. Questions regarding responsibilities for provisions, including medications and food, need to be answerable in simple and clear terms.
5. Questions concerning liability must be similarly answerable.
6. Questions about possible damage to host home (or basement) must be also answered in easily understandable and honest terms.

HBSA is a low profile program as we foresee it. Questions by individuals and by the media are answered when, and if they arise. Program oversell is distinctly avoided.

Some news releases, apart from those relevant to addressing the pertinent questions (such as those we have identified as central to the issue), may, however, be prepared and used if needed:

1. Some homes, as part of HBIS may have been identified as having basements though they do not have them, so that a TV, radio, newspaper message explaining how

HBIS was done, and how therefore some errors were possible (and acceptable) may be appropriate.

2. Some homes with basements may not have been so identified, so that a TV, radio, newspaper message may be appropriate to encourage residents with basements who did not receive the mail-out package to contact the local office of civil defense.

Throughout, an emphasis on the voluntary nature of the program, on the norm of helping behavior especially under emergency conditions, and on the importance of the home basement sharing program as an additional, but neither sole nor singly best, national resource for times of crises, would tend to defuse whatever controversiality, if any at all, may be involved in the effort.

Shelter Space Assignments

This dimension of the home basement sharing program is governed predominantly by the criterion of maximizing the quality of shelter for all Americans.

Secondary to this is the criterion of maximizing sheltering which reflects preferences between public and private facilities, even though their peacetime expressions may not exactly mirror actual behavior in an emergency situation.

Again, of course, flexibility is an essential component of the standards which may lead to a mix of public and private shelters.

- (a) Maximization of shelter quality implies that assignments to private homes would be made

- * for those without public shelter within time/distance specifications that make for high likelihood of reaching shelter when needed,
- * for those who may be within time/distance standards of public shelters but the available public shelters provide less protection than the available private basements within the time/distance radius.

- (b) Maximization of personal preferences implies that within the constraints of shelter quality, the highest priority assignments to private shelters would be given to those who may prefer private to public shelters. Since there are no provisions in our approach to basement sharing planning to determine this on a nation-wide basis, the criterion can be maximized if as many Americans are allocated to private shelters as possible along with an option to use available public shelters.
- (c) Maximization of personal preference also implies that no more families or persons are assigned to a given private shelter than the resident has stipulated, unless subsequent communications with such residents make it possible to alter this "hosting factor."
- (d) Flexibility for the nation's citizens is provided by the actual in-crisis option to go either to a public shelter or, for as many as possible, to choose one of alternative private shelters.
- (e) Flexibility for DCPA is attained by using shelter quality standards as key to assignment, and by using the "hosting," rather than "packing," factor as the initial limit for the aggregate of assignments in each community.

The shelter space assignment aspect of home basement sharing has essentially three major components: that of verification of protectability Self-Assessment Forms; an optional component involving a program for pre-arrangements for sharing and reporting pre-arrangements to local civil defense officials; and an actual shelter space allocation process carried out by the local directors of civil defense and their staff members and/or volunteers (as needed).

A. Basement Suitability Verification

Even if a simple "key" to translate basement characteristics into protection factor estimates is developed and used in the HBSA

program, there are obvious difficulties in terms of the mail-out portion of HBSA:

1. Some people, even with clear instructions, may find it difficult to make the translation from basement characteristics into basement's suitability as shelter.
2. Some people may overestimate the protection their basement will give them (and, if willing to share, to others).
3. Some people may underestimate the protection their basement will give them (and to others).
4. Some people may leave out information from the Self-Assessment Form which would make verification possible on which would make an evaluation of available free space possible.

In most instances, the Self-Assessment reports will permit the local director of civil defense an easy evaluation: they will be either obviously right, or close to being right (perhaps overestimating or underestimating the protection factor somewhat, but not changing the "placing" of the basement into either the suitable or unsuitable categories), or they will be obviously, or almost certainly, wrong.

Thus a sorting of the returns into several categories, in the local civil defense office, seems indicated as part of the verification, and assignment, process:

1. Self-Assessment Forms which clearly indicate that the basement would be suitable as shelter, in turn broken into
 - a. Those who expressed a willingness to share,
 - b. Those who may prefer to use their own basement for their own family but not share, and
 - c. Those few who may have suitable basements but plan to use public shelter rather than their own basement, alone or in the sharing modality.

2. Self-Assessment Forms which clearly indicate that the basement is unsuitable as shelter, including
 - a. Those who may plan to use it, and some even share it, despite its inadequacy as shelter, and
 - b. Those who do not plan to use their unsuitable basement as shelter.
3. Self-Assessment Forms which are marginal in terms of the probable accuracy of the suitability reported.
4. Self-Assessment Forms which seem distinctly erroneous (in overestimating, or underestimating protectability, or clearly misunderstanding the "translation key")
5. Self-Assessment Forms which leave out essential information that would allow suitability of basement verification.

Forms acquired through the direct contact survey, as a follow on after the completion of the mail-out HBSA, may occasionally contain surveyor errors as well, and these, in effect, have to be "sorted" in a similar manner along with all other Self-Assessment Forms. Mail, phone or face-to-face contacts may prove desirable:

- (a) if many Self-Assessment (or Surveyor) reports fall into categories 3 - 5 above,
- (b) in areas which are potential host communities in a relocation program
- (c) in subareas of communities where shelter deficits, either in numbers or quality of shelter spaces or both, are highest.

B. Sharing Pre-arrangements

An effort to encourage sharing pre-arrangements, and to report such pre-arrangements to the local civil defense director, is considered by us an optional, if desirable, aspect of home basement sharing.

1. The program is optional in the sense that existing and evolving pre-arrangements could be reflected in iterations of shelter assignments made, in turn, without foreknowledge of pre-arrangements or without a specific effort to encourage pre-arrangements.
2. It is a desirable program, however, because it would serve to underscore the voluntary nature of home basement sharing, and would reduce the aggregate number of assignments which would have to be made by local civil defense officials.

Residents with suitable basements who expressed their willingness to share would receive:

- (a) A letter, signed by the highest local official and the local director of civil defense, explaining the program, its desirability, and steps by which pre-arrangements might best be made, and by which pre-arrangements with others who have also suitable basements can be avoided, and why such pre-arrangements with other potential hosts should be avoided.
- (b) A postage-free postcard on which, by a convenient target date, prepared basements should be reported to the local office of civil defense.

There are, of course, major limitations associated with a pre-arrangement program of this, or any, type. The main ones can be readily identified:

1. Most people, otherwise willing to share, are unlikely to make the necessary effort so that the program may not be cost-effective. Some field testing of its worthwhileness would seem prudent before a commitment to carry out the program on a national scale would have to be made.
2. Many people may fail to report pre-arrangements they may make not because of their oppositions to the concept or because of opposition to reporting (though there will be some such attrition)

but for the many and varied reasons for which people fail to respond to mail-outs in general.

3. The program has particular applicability to in-place sheltering since no pre-arrangements with potential relocatees can be made. Even so, of course, those pre-arrangements which would result in relocatee host communities would relieve pressure from existing public shelters to some degree.

C. Specific Shelter Allocation

Within the context of priorities already identified and the existing population distribution in light of Community Shelter Plans, we envisage the actual allocation process for in-place sheltering to follow the already well developed, field-tested and field-applied, procedures such as those specified in National Community Shelter Planning Program, Federal Civil Defense Guide, Part D, Chapter 3, Appendix 1, especially with regard to Step 1D of the process.

In fact, this final planning step in the home basement sharing program is completely paralleled by the CSP effort, except that we are dealing with a wider scatter or essentially smaller shelters. We see no reason to attempt to improvise improvements on an approach which has already yielded valuable results in most CSP areas of the nation.

While the specific shelter allocation program is, perhaps, central to the ultimate success of home basement sharing, the technology and organization to implement it almost immediately already exists in DCPA and among those who have been responsible for the formulation of Community Shelter Plans.

Specific shelter allocation under the relocated mode does not appear feasible except to the extent to which in-place sheltering in relocatee host communities would make more public shelter spaces available to the city evacuees. Thus additional allocations, as may be possible in light of available public home spaces after pre-arrangements will have been completed and after shelter allocations of local residents will have been made, must be accomplished during an actual relocation, and is, therefore, an aspect of crisis-oriented planning.

For the relocated civil defense posture, therefore, the NOP system shades into COP as far as specific redistribution of the population among public and private shelter is concerned, and especially distribution of the potential relocatees.

The major preparatory steps to carry out the Shelter Space Assignment aspect of home basement sharing thus include at least the following ones:

1. Development of procedures for verification of Self-Assessment Reports, both received by mail and from the direct contact surveyors.
2. Training, as needed, of civil defense employees and, as required, of volunteers in the use of the procedures.
3. Development of procedures to conduct follow-up basement surveys in those instances in which the Self-Assessment Form does not allow suitability verification with high accuracy.
4. Design of a letter to accompany a postcard reporting pre-arrangements with relatives, friends or neighbors.
5. Design of a postcard on which pre-arrangements would be reported.
6. The design and implementation of an experiment, in a number of communities with variable characteristics, to determine the approximate cost-effectiveness of a pre-arrangement survey as a distinct phase in home basement sharing planning.
7. Development and issuance of a version of a document like "National Community Shelter Planning Program" adapted to the home basement sharing approach, especially as regards specific shelter allocation.

Feedback

The feedback system of home basement sharing, of course, revolves around the design and dissemination of information to Americans who participate in the suitability analysis survey of the program.

The most relevant criteria include maximization of communications clarity, maximization of dissemination of information which would lead to effective coping behavior in an emergency, and maximization of information which would reinforce willingness to participate on the part of those who have so expressed themselves, and minimize possible guilt, or other negative feelings, on the part of those who, while having suitable basements, may have been unwilling to share.

Important as a criterion for the feedback process is also the speed with which information flows back to the participants in the HBSA program. Thus we assume that the appropriate feedback message would go to each program participant without delay.

The major types of messages which we have identified as particularly important include:

1. Design of a message to residents with suitable basements who will have made pre-arrangements to shelter relatives, friends or neighbors, in turn, dependent on whether such reported pre-arrangements "fill the basement" up to the hosting factor limit or whether some free spaces might still remain.
2. Design of a message to residents with suitable basements who have made no pre-arrangements or have not reported any, and to whom tentative address-based assignments of sharers have been made.
3. Design of a message to those who have suitable basements but will not, or cannot (for whatever reasons) share them, with particular emphasis on those who might not even plan to use their own basement despite its suitability as shelter.
4. Design of a message to those residents whose basements could be upgraded at low, or tolerable cost. We suggest, of course, that such a message would be accompanied by a publication such as Fallout Protection for Homes With Basements, Department of Defense, Office of Civil Defense, January 1966, or an appropriately up-dated version thereof.

5. Design of a message to those whose basements are not suitable and not upgradeable, or are upgradeable at excessive cost and who, therefore, would be themselves in need of shelter, public or private.
6. Many, though not all, participants in home basement sharing will have reported their willingness to accept "packing" rather than "hosting" numbers of sharers if this were necessary and a matter of life and death for other Americans. In some locations, and in some subareas of the nation's communities (and especially in localities designated as host communities for relocatees), the local civil defense director may need to increase the amount of private sheltering above and beyond the "hosting factor" preferences. Thus, a message needs to be designed for those who may be asked to accept more sharers than they had expressed themselves willing to take in.
7. Such a message, encouraging participation beyond the commitments made in HBSA, should be designed also for those willing participants who may have initially reported unwillingness to accept "all" that their basement could accommodate.
8. If the above priorities were exhausted and the sheltering needs persist, those who had originally indicated that they might not be able to shelter anyone may have to be contacted to further alleviate remaining deficits in shelter space numbers or quality of protection or both. A message needs to be designed for such residents as well, making it possible for them to either change their mind (and accept sharers) or, equally comfortably, maintain their preference for non-sharing (for whatever reasons).
9. In feedback communications of all these types, the inclusion of best available material which

would enhance the family's effectiveness in coping with an emergency is also postulated. This may be the Emergency Information Readiness package, or material of this type.

Residents without basements would, in effect, have not been contacted at all. Whatever they may know about home basement sharing would come from the mass media, and those civil defense news releases which media or citizen questions, or situational factors, dictate. Residents with unsuitable basements would receive initial feedback, but not specific shelter assignment information.

1. An information package has to be developed, and ready for distribution, for residents without basements as well as those with unsuitable basements.
2. Such an information package would be distributed under crisis conditions, and would reissue information about available public shelters in the resident's vicinity, extant private shelter assignment options (necessitating, as we proposed, contacts by the potential guest with the host(s)], as well as information on how to best cope with the emergency situation, along with "guest-host" relationship advice should the resident choose private over public sheltering.
3. A special information package will have to be developed for relocatees, presumably as an aspect of crisis allocation planning, but, if home basement sharing is undertaken, also including a form which can specify private shelter allocations for relocatees as they enter their host communities.

These then are the main dimensions of a desirable feedback system as an integral part of home basement sharing planning.

XVI. CRISIS ORIENTED PLANNING: AN OVERVIEW

The pure, and essentially the most difficult, case of crisis oriented home basement sharing planning assumes that none of the planning phases which are required, or desirable, will have been completed under normalcy conditions.

However, even in the absence of actual planning steps, we must assume that some major preparatory measures will have been taken under normalcy conditions:

1. Materials, forms, message formats and contents necessary for home basement sharing planning will have been developed.
2. Key policy decisions will have been made, and will have become known to the local civil defense officials, including decisions as to required protection standards, homes to be included in a program, and answers which may need to be given to questions raised by the public or the media or both.
3. Procedures for carrying out planning activities in a crisis will have been pre-established.

Without such preparatory steps, we do not see that a planning program could be successfully launched, completed and implemented in a crisis.

A crash program, of course, remains feasible but its basic output leads to shelters in a "catch as catch can" manner, and even a successful crash program necessitates preparatory steps prior to the occurrence of a crisis.

A Crash Program

The major criteria are simple enough: minimization of time between program onset and its direct implementability or implementation)

following the beginning of an acute crisis which threatens to engulf the nation in hostilities; minimization of voluntarism in program participation; maximization of participation level. A crash program of the type we envisage is, in turn, a very high profile effort. Time minimization can be achieved only if there is direct and intensive involvement of all media of mass communication, television, radio and newspapers.

Since even the most acute crisis need not result in warfare either immediately or at all, the media dimension of the effort can be combined with a more systematic way of accomplishing basement identification survey and basement suitability analysis thus permitting planning for sharing if the crisis is a protracted one, and even yielding home basement sharing plans for post-crisis normalcy conditions should the emergency be resolved without conflict.

Media messages, which themselves require development as a key preparatory measure which cannot be adequately accomplished except under normalcy conditions, would have to be able to achieve, at least, the following objectives:

1. Inform the residents about the nature of the crisis and needed national response to it.
2. Inform the residents about home basement sharing as an important component of the nation's capacity to minimize loss of life should the crisis lead to its unwanted climax.
3. Teach the residents who have basements how they can make a source determination of the availability of their basement as shelter.
4. Show the residents with suitable basements how they might wish to visibly indicate that their basement is available to others in need.
5. Display maps and instructions on public shelters throughout the community.
6. Teach, as much as possible, about most effective behavior in a nuclear crisis, including the need for shelter provisions and types of desirable provisions people should take along whether to public or private shelters.

7. In so far as we view the crash program valuable in its own right but also as a step toward more systematic shelter planning of the crisis does not escalate rapidly, informing the public that information about public shelters (Community Shelter Plans, Emergency Information Readiness) will be distributed to their homes, along with forms which will be needed to make better use of home basements (two copies of Self-Assessment Form and a copy of the Plan Sheet).
8. To inform the public that such forms, once received, should be filled out by all residents with basements and deposited in the nearest mailbox as soon as possible or delivered to the local civil defense office in some other manner as soon as possible.
9. If a national decision to evacuate the cities were made during the crash program stage of the crisis oriented planning for basement sharing, such media messages would be augmented by explanations of the implications of relocation for most communities as well as for relocatees.

The major drawback associated with crash programs of home-basement sharing has to do, we think, mainly with the difficulty in making a decision to launch the program to begin with. Undoubtedly, such a decision would have to be made by the President, and it is highly likely that concern over the potential aggravation of an already acute crisis might be a major deterrent toward initiating any crash program, including that of crisis relocation.

In crash programs of the type considered, high profile becomes an advantage even though we consider it to be damaging to normalcy oriented planning. An effort which has the earmarks of a well thought out, well organized, voluntary, and mutually helping program would, in fact, have morale and confidence enhancing impact and thus increase program participation. At the same time, the assumed nature of the crisis with its rapid flow of threatening events would not be conducive to the development of participation degrading controversies.

The major preparatory steps, unique to the crash program concept, include:

1. Normalcy period design of appropriate media messages.
2. Availability of information and survey packages to be sent to residents in the early stages of a crisis.
3. Arrangements with the United States Postal Service to deliver necessary materials to individual homes on a crash basis.

A More Protracted Crisis Program

In the way of a summary, only little needs to be added. If an acute crisis does not rapidly escalate to make not only the crash planning program, but also its implementation necessary, home basement sharing would be accomplished "as if under normalcy," save only for increased speed of the program effort.

That volunteers can be marshalled, and used, seems obvious.

There are, however, some modifications and slight shifts in emphasis:

1. It would be particularly important to develop the home basement sharing program under crisis conditions for high priority areas of the nation (relocatee host communities, communities with high shelter deficits, subareas within communities with shelter deficits) and to complete private shelter allocations before other community areas, or communities, would be planned for.
2. No pre-arrangement would be carried out, and the whole shelter assignment program would be implemented by the local office of civil defense, aided, as needed, by other public servants and by volunteers.
3. Only the most direct feedback concerning actual assignments of shelter would be possible both to hosts and to sharers.

4. High program profile, in terms of media messages about the state of the planning and various specific requirements of the program, would continue.

If relocation were mandated, and were to take place, during the crisis

1. Private shelter assignments, in addition to information about public shelters, would be provided to as many relocatees on arrival as possible, and to all others,
2. As soon as each community subarea plan were completed, in the aggregate care facilities of the relocatees, or
3. In the private homes in which they may be accommodated as part of relocation, though not necessarily sheltering, program.

Throughout, the key principle of home basement sharing, as of, indeed, all defense mobilization activities would be to do the maximum that can be accomplished with available financial and human resources within each successive minimum of time, that is, within two days, three, four...and so on.

Mobilization of large scale volunteers, resources, under crisis conditions, is both feasible and desirable and crisis oriented planning could be, essentially, completed over a period of only several days.

XVII. A CONCLUDING REMARK

Should there be a national planning program for home basement sharing?

A question of this type puts the researcher, in some sense, on the spot. He acquires insight in the process of studying and thinking. But the insight of the researchers is often, of necessity, blinded by predilections stemming from disciplinary orientations, ideological and philosophical commitments, involvements in networks of personal, and political, relationships. Not that policy makers are free of such foibles, human as they are. But there is a fundamental difference: the output of policy making is policy; the output of research is knowledge on one hand, and knowledge-as input to policy on the other hand.

Thus the preferences of the researchers as regards to policy must be given a lesser weight than the policy preferences of those whom our society mandates, by election or appointment, to make policy. Despite these limitations, we cannot but address the central question whether or not there should be a planning program to include home basement sharing in the nation's sheltering posture at least partially, if with some trepidation.

The question, we think, needs to be almost reversed: why should America not have a program which allows our people to effectively help one another?

Once phrased in this manner, the evidence seems overwhelming:

1. There are many basements in the nation's homes.
2. Many of them would be suitable as shelter against fallout, and many might also have some benefit in terms of protection against primary weapons effects should our country be subjected to a nuclear insult.
3. Many Americans are willing to use their basement as shelter, if it is suitable, and by far most of them are willing to share with others.

4. Many Americans are willing, on a volunteering basis, to give of their time and effort to increase the quality of the nation's civil defense.
5. Public shelter deficits in some areas make it highly desirable to provide for alternatives of which home basement sharing is a key one, and the construction of expedient shelters may be a further fallback possibility.
6. Crisis Relocation Planning may lead to a situation in which the shelter deficit in host communities for evacuees might become particularly severe, so that alternatives to public sheltering may not only be desirable but rather essential.

We do not assume that our analysis, and the approach we have detailed out, may be the final word on home basement sharing planning. But it provides a good structure and process in which an actual program can be anchored.

This is so mainly because we have sought to consider several major criteria as guides: minimum program cost, maximum voluntarism, maximum level of participation given cost constraints and limitations which, in small ways, the voluntary nature of the program would present.

Home basement sharing is an altogether feasible program, morally, socially, politically and financially. It can help save additional lives of Americans should the worst, a nuclear war, ever happen. And it can have good impact on the nation's morale in general because it is an effort in which family helps family, individual helps individual.

FOOTNOTES

- ¹Mandate for Readiness, DOD, DCPA, 1974 Report, page 23.
- ²Mandate for Readiness, DOD, DCPA, Table 5, pages 58-59.
- ³Ernest C. Harvey and Robert W. Hubenette, Alternative Hosting and Protective Measures, Stanford Research Institute, December 1968, Reprinted December, 1974, page 57.
- ⁴Data Book for the 1964 National Study, University of Pittsburgh, December, 1964, page 39.
- ⁵Americans Views on Civil Defense in the Cold War Context: 1966, Jiri Nehnevajsa, University of Pittsburgh, December, 1966, Table IV-7, page 89.
- ⁶Jiri Nehnevajsa, Americans and Civil Defense, University of Pittsburgh, April, 1972, page 74.
- ⁷Jiri Nehnevajsa, op. cit., page 17.
- ⁸Home Basement Surveys, Office of Civil Defense, Department of the Army, March, 1966, page 3.
- ⁹See, for instance, Ralph Garrett, Civil Defense and the Public, Research Report No. 17, Office of Civil Defense, Department of the Army, October, 1971, page 7.
- ¹⁰Jiri Nehnevajsa, Home Shelter Surveys: Patterns of Acceptance, University of Pittsburgh, August, 1967.
- ¹¹Home Basement Surveys, OCD, Department of the Army, March, 1966, esp., page 11, Annex B.
- ¹²Home Basement Surveys, op. cit., page 13, Annex C. See also, DCPA Attack Environment Manual, DCPA, Department of Defense, C G 2--1A6, June, 1973, esp. Chapter 6, Panel 21.
- ¹³Jiri Nehnevajsa, Perspectives on Home Basement Sharing, University of Pittsburgh, November, 1974, esp, Table 10, page 36.
- ¹⁴John Christiansen, Field Testing the Feasibility of Using Residential Shelters as Group Shelters, Brigham Young University, September, 1973, esp, Table 6, page 48 (Group B) and Table 9, page 54 (Group A).
- ¹⁵Jiri Nehnevajsa, op. cit., Table 11, page 38.
- ¹⁶John R. Christiansen, op. cit.

FOOTNOTES (continued)

¹⁷Jiri Nehnevajsa, Perspectives on Home Basement Sharing, University of Pittsburgh, November, 1974, Table 4, page 15.

¹⁸John R. Christiansen, Field-Testing Procedures..., op. cit., Brigham Young University, September, 1975, Tables 10 and 11, page 94 and 95.

¹⁹Jiri Nehnevajsa, op. cit., Table 8, page 31.

²⁰Underlined as in the original. John R. Christiansen, Field-Testing Procedures ... (Phase II), op. cit., pages 128-129.

²¹Derived from Table 22, Housing Characteristics, op. cit., U.S. Summary Volume.

²²Jiri Nehnevajsa, Perspectives on Home Basement Sharing, op. cit., page 60.

²³Emphasis ours, not Christiansen's. John R. Christiansen, Field-Testing ... op. cit., page 128.

²⁴Jiri Nehnevajsa, Crisis Relocation: Perspectives of Americans, University of Pittsburgh, January, 1975, page 36.

²⁵The data refer to Americans Volunteer, 1974, Action, Washington, D.C., 1975, esp., page 2, 3 and 11 for the above statistics.

²⁶John R. Christiansen, Field-Testing ... op. cit., pages 97-98.

²⁷John R. Christiansen, Field-Testing ... op. cit., page 52.

²⁸Mandate for Readiness, 1974, op. cit., esp., Table 5.

²⁹DCPA Attack Environment Manual, Chapter 6, Panel 20, June, 1973.

³⁰DCPA Attack Environment Manual, op. cit., Chapter 6, Panel 21.

³¹DCPA Attack Environment Manual, op. cit., Chapter 2, Panel 19; also Chapter 6, Panel 19.

³²Emphasis in our original. Jiri Nehnevajsa, Perspectives on Home Basement Sharing, op. cit., page 58.

³³The discussion here summarizes, for our purposes, various sections of the Brigham Young University research report and of its Appendix. John R. Christiansen, Field-Testing ... op. cit.

FOOTNOTES (continued)

- ³⁴John R. Christiansen, Field-Testing ... op. cit., page 130
- ³⁵John R. Christiansen, Field-Testing, op. cit., page 132.
- ³⁶John R. Christiansen, op. cit., pages 122ff.
- ³⁷Jiri Nehnevajsa, Perspectives on Home Basement Sharing, op. cit., page 53.
- ³⁸Jiri Nehnevajsa, Americans and Civil Defense: Some Highlights on the 1972 National Survey, University of Pittsburgh, 1972, page 30.
- ³⁹John R. Christiansen, Field-Testing ... op. cit., page 98.
- ⁴⁰Emphasis ours. Data from the city of Colorado Springs, John R. Christiansen and W. Keith Warner, Field-Testing and Feasibility of Using Residential Shelters as Group Shelters, Draft final report, September, 1973, page 65.
- ⁴¹John R. Christiansen, Field-Testing ... op. cit., page 99.
- ⁴²Jiri Nehnevajsa, Perspectives on Home Basement Sharing, op. cit., Table 8.
- ⁴³Jiri Nehnevajsa, Perspectives on Home Basement Sharing, op. cit., page 11.
- ⁴⁴Colorado Springs City data derived from John R. Christiansen and W. Keith Warner, Field-Testing and Feasibility ... op. cit., 1973, esp. page 41 and 43; the Colorado Springs area data are derived from John R. Christiansen, Field-Testing ... op. cit. esp. pages 69-70.

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HOME BASEMENT SHARING:

AN ANALYSIS AND A POSSIBLE APPROACH TO PLANNING

Unclassified, University of Pittsburgh, September, 1976, 191 pp.

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